

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

aHD1695 Reserve
.B3U5
v.1
Pt.2

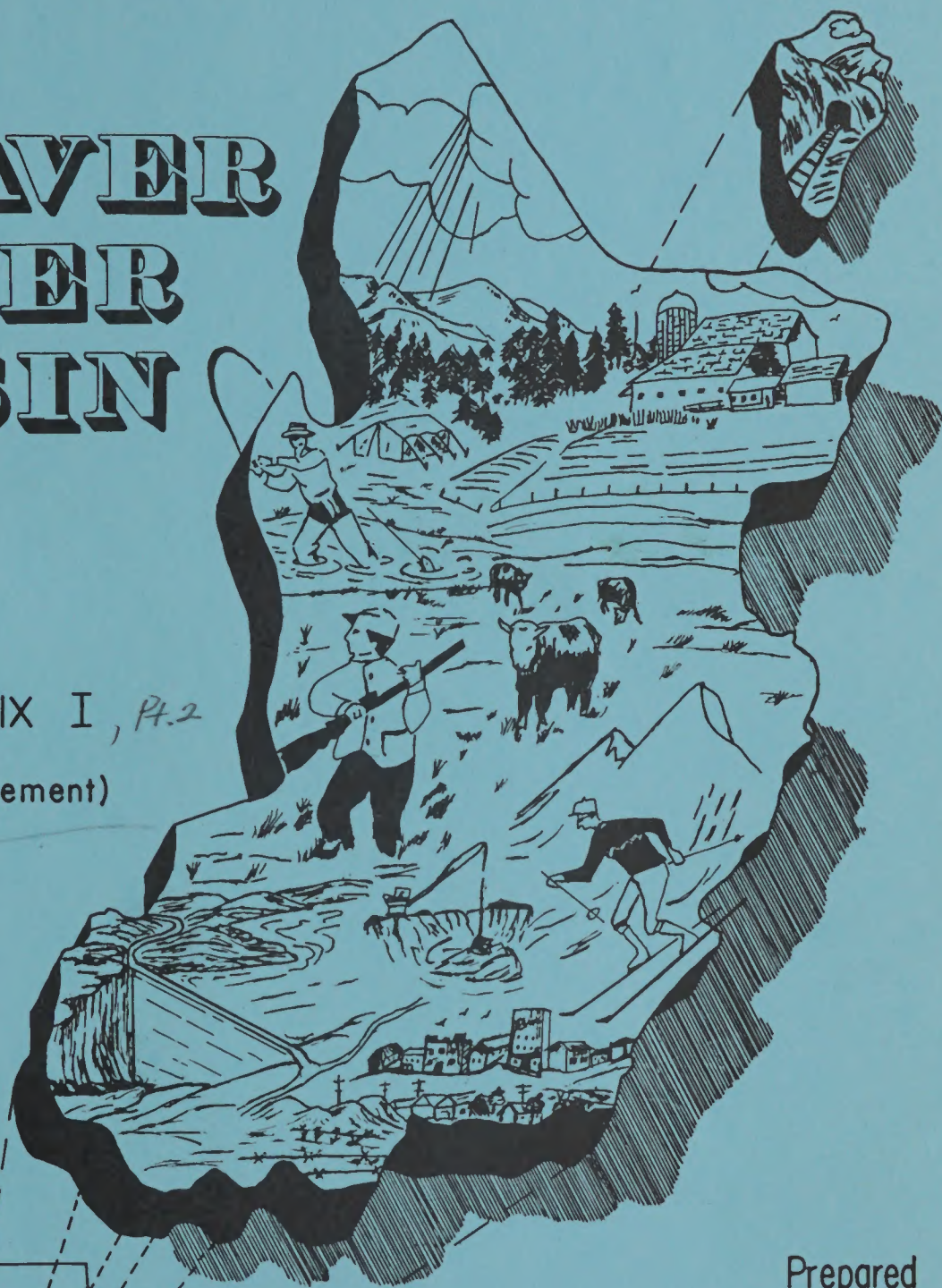
NATURAL RESOURCE INVENTORY

BEAVER RIVER BASIN

APPENDIX I, Pt. 2

(Soils Supplement)

UTAH
NEVADA



Prepared By
UNITED STATES
DEPARTMENT of AGRICULTURE
Economic Research Service — Forest Service
Soil Conservation Service
In cooperation with
UTAH STATE
DEPARTMENT of NATURAL RESOURCES

AD-33 Bookplate
(1-68)

NATIONAL

**A
G
R
I
C
U
L
T
U
R
A
L**



LIBRARY

NATURAL RESOURCE INVENTORY

APPENDIX I

SOILS SUPPLEMENT

BEAVER RIVER BASIN, UTAH

1972

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

MAR - 8 1977

CATALOGED

Prepared by
UNITED STATES DEPARTMENT OF AGRICULTURE
Economic Research Service - Forest Service - Soil Conservation Service
In cooperation with
Department of Natural Resources, State of Utah

The following publications have been prepared under the Beaver River Basin study:

Summary Report

- Appendix I Natural Resource Inventory
 Soils Supplement
- Appendix II Present and Projected Resource Use and Management
 ~~Water Related Land Use~~
 Water Budget Analysis Supplement
- Appendix III Resource Related Problems
- Appendix IV Economic Base and Needs
- Appendix V Potential Development Opportunities
- Appendix VI Watershed Investigations

C O N T E N T S

	Page
INTRODUCTION	1
SUMMARY	2
Part 1 - Reconnaissance Soil Survey, Forest Service (1 - 96)	3
Part 2 - Generalized Soil Association Descriptions, Soil Conservation Service (97 - 149)	41
GLOSSARY	78

Tables

Table 1	80
---------	----

Maps

Map 1 (7 sheets)	84
------------------	----

APPENDIX I

(SUPPLEMENT)

SOILS

I N T R O D U C T I O N

A reconnaissance type soils map was made in two parts. Forest Service personnel mapped essentially all of the national forest lands and the Soil Conservation Service mapped the remainder. The two parts of the survey were not closely coordinated. Mapping units delineated by the Forest Service personnel were small fairly homogeneous units. In most mapping units, a typical profile was described. The family, and subgroup of the new soil classification system (Taxonomy) was identified as well as it could be from the data recorded. The mapping units on national forests thus consisted mainly of one identified soil. The mapping units were identified as soil associations 1 through 96. If sufficient time had been available, many of these units could have been combined into larger soil associations consisting of multiple soil units, but because of the limited time, the units were included here as mapped in the field. Soil associations 97 through 149 were mapped by Soil Conservation Service personnel. These units consisted of association or combinations of 1 to 7 different soils. Many soil associations included a miscellaneous land type such as Rock land. The estimated composition of the various soils of each soil association was described. The soil associations mapped on these non-forest lands are larger units, in general, than those on national forests because they included more soils. Most of the soils in the associations were identified to the subgroup level in the new classification system, although some were identified only to the great group level. A single name such as Torrifuvent, Calciorthid or Haplargid denotes the Great Group. Whereas 2 or more names such as Xerollic Haplargid, or Lithic Torriorthent denotes the Subgroup.

All of the soils mapped in both surveys were described in terms of the slope, exposure, soil texture, water holding capacity, elevation, parent material and potential use. Estimated annual precipitation, and range site or capacity unit are given for mapping units 97 through 149, but are not given for the other units.

Acreages of mapping units were determined by dot counting and then were adjusted to be consistent with the watershed areas used throughout the study. Mapping units are mapped and tabulated in the back of this supplement.

SOILS

S U M M A R Y

About 5 percent of the 5.2 million acres of land in the Beaver River Basin have soils in the cold (Cryo) group. This group consists of 2 percent skeletal soils (very gravelly or very cobbly profiles, 1 percent lithic soils (shallow - less than 20 inches to bedrock), and 2 percent deep non-skeletal soils. These soils are too cold for cultivated crops and are generally in mountains at elevations of over 8,000 feet.

About 6 percent of the area has cool soils (Borolls and Boralfs). This group consists of 2.7 percent skeletal soils, 1.8 percent lithic (shallow) soils, and 1.5 percent deep nonskeletal soils. These soils are mostly too cold for cultivated crops and generally too steep. These are mostly mountain soils at elevations below 8,000 feet.

About 73 percent of the land has soils with temperate climates suitable for crop growth. These soils consists of 1 percent sandy soils, 1 percent skeletal soils, 8 percent lithic soils and 63 percent deep nonskeletal soils. About half of the deep non-skeletal soils were classified as being suitable for cultivation if irrigation water is available.

In addition to the soils described above, about 0.5 percent consist of wet soils, 6.5 percent alkali soils, 3 percent playas and 6 percent rock land and rock outcrops. These groups were not tabulated by climate, although most of the wet soils, the alkali soils and the playas are in the warm (temperate) climate and most of the rock lands and rock outcrops are in the cold or cool climates.

The sandy soils, skeletal soils and lithic (shallow) soils all have low water holding capacities. Skeletal soils generally have stony or cobbly surfaces also. The alkali soils and playas generally produce only sparse vegetation.

The descriptions of the soil associations give more detailed information.

SOIL ASSOCIATION DESCRIPTIONS

Association 1

This soil is in the sandy-skeletal, mixed family of Lithic Haploborolls. * It is forming on bare rock cliffs and low rock knobs in material derived from rhyolitic rocks. Slopes are 10 to 80 percent at elevations of 6,000 to 8,000 feet on all exposures.

This soil is shallow, has a very stony sandy loam textured surface layer, a sand textured subsoil over rhyolitic ignimbrite bedrock at about 1½ feet.

This soil will hold about 0.5 inches of water. Soil depth is available to plants to the bedrock layer. The erosion hazard is moderate, permeability is moderate and surface runoff is medium. The average annual precipitation is 15 to 20 inches.

This soil is suitable for range with limited grazing.

Association 2

This soil is in the loamy, mixed family of Aridic Lithic Argiborolls. It is forming on low ridges in material derived from porphyritic igneous (rhyolitic) rocks. Slopes are 30 to 80 percent at elevations of 6,000 to 6,500 feet on all exposures.

This soil is shallow, has a gravelly sandy loam textured surface layer, and a cobbly clay loam subsoil (B horizon) over bedrock at about 1½ feet.

This soil will hold about 2 inches of water available to plants to bedrock. The soil is moderately eroded, erosion hazard is high, permeability is slow and surface runoff is rapid to very rapid. The average annual precipitation is 16 to 20 inches.

Association 3

This soil is in the sandy-skeletal, mixed, nonacid, frigid family of Lithic Xeric Torriorthents. It is forming on broad lower ridge slopes in material derived from coarse sandstone and conglomerate rocks. Upper slopes are about 80 percent, lower slopes are 10 to 30 percent at elevations of about 6,000 feet on all exposures.

* refers to the new soil classification system "Taxonomy". Family definitions are given briefly in the Glossary.

This soil is shallow, has a very gravelly fine sand surface layer, and a fine sand partially decomposed rock subsoil, over bedrock at about 1½ feet.

This soil will hold about 1 inch of water available to plants above the bedrock. The soil is severely eroded, the erosion hazard is high, permeability is rapid and surface runoff is very rapid. The average annual precipitation is 16 to 18 inches.

This soil is suitable for range with limited grazing with only a fair potential if erosion is controlled.

Association 4

This soil is in the sandy-skeletal mixed, frigid family of Lithic Xeric Torriorthens. It is forming on fault scarps and alluvial and colluvial slopes in material derived from porphyritic igneous rocks. Slopes are 40 to 60 percent at elevations of about 6,200 to 6,600 feet on mainly northerly exposures.

This soil is shallow, has a very stony sandy loam textured surface layer, over bedrock at about 1 foot.

This soil will hold about 1 inch of water available to plants above the bedrock. The soil is moderately eroded, the erosion hazard is high, permeability is moderate and surface runoff is rapid. The average annual precipitation is 18 to 20 inches.

This soil is suitable for range with seeding possible on some of the lower slopes.

Association 5

This soil is in the coarse-loamy, mixed nonacid, mesic family of Ustic Torrifuvents. It is forming in upper valleys in alluvium derived from mixed rocks. Slopes are about 5 percent at elevations of about 6,000 feet on westerly exposures.

This soil is deep, has a sandy clay loam textured surface layer, a loam textured subsoil, and sandy loam C horizons.

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderate, permeability is moderately rapid and surface runoff is medium to rapid. The average annual precipitation is 17 to 18 inches.

This soil is suitable for range with good potential for grazing

Association 6

This soil is in the fine-loamy, mixed family of Aridic Haploborolls. It is forming on upper slopes of an alluvial valley in alluvium and colluvium derived from mixed rocks. Slopes are 5 to 10 percent at elevations of about 6,300 feet on north and south exposures.

This soil is deep, has a silt loam surface layer, and silt loam and gravelly sandy clay loam subsoil, extending to nearly 5 feet.

This soil will hold about 10 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderate, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 15 to 18 inches.

This soil is highly suitable for range with good potential for grazing.

Association 7

This soil is in the fine-loamy, mixed, nonacid, mesic family of Ustic Torrifuvents. It is forming on old pediments derived from volcanic and sedimentary rocks. Slopes are 0 to 20 percent at elevations of about 6,000 feet on all exposures.

This soil is moderately deep, has a stony sandy loam surface layer, and loam subsoil, over bedrock at 25 to 60 inches.

This soil will hold 2 to 4 inches of water available to plants in a two to five-foot profile. The erosion hazard is high, permeability is moderate and surface runoff is rapid. The average annual precipitation is 14 to 18 inches.

This soil is suitable for range and for seeding.

Association 8

This soil is in the fine-loamy, mixed, nonacid, mesic family of Ustic Torrifuvents. It is forming in bottomlands in alluvium derived from igneous rocks. Slopes are 5 to 10 percent at elevations of about 6,000 feet on northerly exposures.

This soil is deep, has a loam surface layer, silt loam subsoil, and a stratified substratum of silt loam, sand and gravel.

This soil will hold about 5 inches of water available to plants in a five-foot profile. The soil is moderately eroded, the erosion hazard is moderately high, permeability is moderate and surface runoff is rapid. The average annual precipitation is 12 to 18 inches.

This soil is highly suitable for range if active gullying is controlled. Vegetal cover consists of big sagebrush, rubber rabbit-brush and wheatgrass.

Association 9

This soil is in the loamy, mixed family of Lithic Haploborolls. It is forming on steep mountains and ridges in material derived from rhyolite rocks. Slopes are up to 40 percent at elevations of 6,000 to 7,000 feet on all exposures.

This soil is very shallow, has a gravelly sandy loam surface layer, and a loam subsoil, over bedrock at about 8 inches.

This soil will hold about 1 inch of water available to plants. The soil is moderately eroded, the erosion hazard is moderately high, permeability is moderate and surface runoff is medium. The average annual precipitation is 14 to 16 inches.

This soil is suitable for watershed and range with limited grazing.

Association 10

This soil is in the loamy, mixed family of Lithic Haploborolls. It is forming on colluvial slopes in material derived from porphyritic volcanic rocks. Slopes are 30 to 60 percent at elevations of 7,000 to 8,000 feet on all exposures.

This soil is very shallow, has a gravelly loamy sand surface layer, over stones, boulders and bedrock at about 1 foot.

This soil will hold about 0.5 inches of water available to plants. The soil is moderately eroded, the erosion hazard is moderately high, permeability is moderately rapid and surface runoff is rapid to very rapid. The average annual precipitation is 16 to 20 inches.

This soil is suitable for watershed and not for range grazing.

Association 11

This soil is in the loamy-skeletal, mixed family of Lithic Haploborolls. It is forming on top of an igneous block in material derived from rhyolitic ignimbrite rocks. Slopes are 20 to 60 percent at elevations of 7,600 to 8,000 feet on all exposures.

This soil is very shallow, has a stony sandy loam surface layer, a sandy loam subsoil (B horizon) with 90 percent stone over bedrock at about 8 inches.

This soil will hold about 0.5 inches of water available to plants. The soil is moderately eroded, the erosion hazard is moderately high, permeability is moderate to slow and surface runoff is moderately rapid. The average annual precipitation is 19 to 20 inches.

This soil is suitable for range with grazing limited to small areas of the more gentle slopes.

Association 12

This soil is in the sandy, mixed family of Typic Haploborolls. It is forming in a mountain basin in material derived from porphyritic volcanic rocks. Slopes are up to 20 percent at elevations of about 7,200 feet on all exposures.

This soil is deep to moderately deep, has a sand to sandy-loam surface layer, and subsoil.

This soil will hold about 3.5 inches of water available to plants in a five-foot profile. The soil is moderately eroded, the erosion hazard is low, permeability is moderate and surface runoff is medium. The average annual precipitation is 19 to 20 inches.

This soil is suitable for range and seeding. Lack of stockwater may limit grazing.

Association 13

This soil is in the fine-loamy, mixed family of Typic Haploborolls. It is forming in an alluvial valley in alluvium derived from porphyritic volcanic rocks. Slopes are 0 to 5 percent at elevations of about 6,600 feet on northwest exposures.

This soil is deep, has a sandy loam surface layer, over stratified layers of sand and loam subsoils and substrata.

This soil will hold about 5 inches of water available to plants in a five-foot profile. The soil is slightly gullied, the erosion hazard is moderately high, permeability is moderately slow and surface runoff is medium. The average annual precipitation is 20 to 21 inches.

This soil is suitable for range for grazing.

Association 14

This soil is in the loamy, mixed family of Lithic Haploborolls. It is forming on narrow ridges and valleys in material derived from latite rocks. Slopes are 0 to nearly vertical at elevations of 7,000 to 8,000 feet on all exposures.

This soil is very shallow, has a sandy loam surface layer, and subsoil, over bedrock at about 8 inches.

This soil will hold about 0.5 inches of water available to plants. The soil is moderately eroded, the erosion hazard is moderate, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 20 to 21 inches.

This soil is suitable for watershed as it is too steep for grazing except in a few places.

Association 15

This soil is in the loamy-skeletal, mixed family of Aridic Argiborolls. It is forming on mountain slopes in material derived from rhyolitic ignimbrite rocks. Slopes are 30 to 50 percent at elevations of 6,200 to 7,000 feet on all exposures.

This soil is shallow, has a gravelly loamy sand surface layer, and a gravelly clay loam subsoil (B horizon).

This soil will hold about 3 inches of water available to plants in a two-foot profile. The soil is moderately eroded and gullied, the erosion hazard is high, permeability is moderately slow and surface runoff is rapid to very rapid. The average annual precipitation is 16 to 20 inches.

This soil is suitable for range with limited grazing in the valleys.

Association 16

This Rock land is on steep mountains in material derived from well-fractured rhyolitic ignimbrite rocks. Slopes are 30 to 80 percent at elevations of 6,000 to 7,000 feet on all exposures.

This soil is very shallow, has a very gravelly coarse sand surface layer, about 4 inches thick over stone and bedrock.

This soil will hold about 0.1 inches of water available to plants. The soil is moderately eroded, erosion hazard is high, permeability is rapid and surface runoff is rapid. The average annual precipitation is 12 to 16 inches.

This soil is suitable for watershed. It is too steep and too susceptible to erosion to permit much grazing.

Association 17

This soil is in the loamy-skeletal, mixed, frigid family of Xerollic Haplargids. It is forming on rolling uplands in residuum derived from well-fractured rhyolitic ignimbrite rocks. Slopes are 5 to 40 percent at elevations of 6,200 to 6,800 feet on all exposures.

This soil is moderately deep to deep, has a very gravelly sand surface layer about 4 inches thick and a very gravelly sandy clay loam subsoil (B horizon).

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is high, permeability is slow and surface runoff is rapid. The average annual precipitation is 14 to 18 inches.

This soil is highly suitable for range for grazing.

Association 18

This soil is in the sandy-skeletal, carbonatic, frigid family of Lithic Ustorthents. It is forming on alluvial and colluvial slopes in material derived from limestone and some coarse volcanic rocks. Slopes are mostly 10 but up to 40 percent at elevations of 6,200 to 6,400 feet on all exposures.

This soil is shallow, has a very gravelly sandy loam surface layer about 4 inches thick and a gravelly sandy loam subsoil, over bedrock at about 10 inches.

This soil will hold about 1 inch of water available to plants. The soil is slightly eroded, erosion hazard is moderate, permeability is moderately rapid and surface runoff is medium. The average annual precipitation is 15 to 17 inches.

This soil is highly suitable for range and has been reseeded. Some gullies need stabilizing.

Association 19

This soil is in the sandy-skeletal, mixed family of Lithic Haploborolls. It is forming on low rolling hills in material derived from rhyolitic ignimbrite rocks. Slopes are up to 40 percent at elevations of 6,000 to 6,600 feet on all exposures.

This soil is shallow, has a very gravelly sandy loam textured surface layer, a subsoil of fractured volcanic rock over soft limestone bedrock at about 1 foot.

This soil will hold about 1 inch of water available to plants in one foot of soil over bedrock. The soil is moderately eroded, permeability is moderately rapid and surface runoff is medium. The average annual precipitation is 13 to 15 inches.

This soil is suitable for range.

Association 20

This soil is in the coarse-loamy, mixed mesic family of Ustic Torrifluvents. It is forming on a pediment in colluvium and alluvium derived from mixed rocks. Slopes are about 5 percent at elevations of 5,400 to 6,000 feet on westerly exposures.

This soil is deep, has a very gravelly sandy loam surface layer, about 32 inches thick and a silt loam subsoil about 20 inches thick.

This soil will hold about 7 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderate, permeability is slow and surface runoff is rapid. The average annual precipitation is 11 to 14 inches.

This soil is highly suitable for range, but is subject to runoff and debris from higher areas.

Association 21

This soil is in the sandy-skeletal, mixed, frigid family of Lithic Ustic Torriorthents. It is forming on low hills of a stream basin in residuum derived from rhyolitic ignimbrite rocks. Slopes are up to 50 percent at elevations of 6,000 to 6,600 feet on all exposures.

This soil is shallow, has a very gravelly loamy sand surface layer about 3 inches thick and coarse rock and gravel and soil to about 10 inches over bedrock.

This soil will hold about 0.5 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is slow and surface runoff is rapid. The average annual precipitation is 14 to 16 inches.

This soil is suitable for range in the valley bottoms but most of the area is too steep for grazing. Gullying in the main drainage needs to be controlled.

Association 22

This soil is in the loamy-skeletal, mixed family of Lithic Argiborolls. It is forming on narrow finger-like ridges in residuum derived from basalt rocks. Slopes are 5 to 60 percent at elevations of 6,000 to 7,000 feet on all exposures.

This soil is shallow, has a very stony silty clay loam surface layer, a gravelly and clay loam subsoil (Bt horizon), over bedrock at about 1½ feet.

This soil will hold about 2 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderate, permeability is moderately rapid and surface runoff is medium. The average annual precipitation is 13 to 14 inches.

This soil is suitable for watershed and range with limited grazing in the valleys.

Association 23

This soil is in the loamy-skeletal, mixed frigid family of Lithic Ustollic Haplargids. It is forming on steep mountain slopes in residuum derived from rhyolitic rocks. Slopes are 20 to 60 percent at elevations of 6,000 to 7,000 feet on all exposures.

This soil is shallow, has a gravelly sandy loam surface layer, a very gravelly clay loam subsoil (B horizon) over bedrock at about 1 foot.

This soil will hold about 1 inch of water available to plants. The soil is moderately eroded, erosion hazard is high, permeability is slow and surface runoff is rapid. The average annual precipitation is 13 to 14 inches.

This soil is suitable for watershed with very limited grazing.

Association 24

This soil is in the loamy, mixed family of Lithic Haploborolls. It is forming on a broad sedimentary basin in material derived from mixed sedimentary rocks. Slopes are 10 to 30 percent at elevations of 5,600 to 5,800 feet on all exposures.

This soil is shallow, has a silty clay loam surface layer about 6 inches thick and a gravelly clay loam subsoil over bedrock at about 1 foot.

This soil will hold about 2 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderate, permeability is moderately slow and surface runoff is rapid. The average annual precipitation is 12 to 14 inches.

This soil is suitable for range and can be reseeded. Erosion control work is needed to control gullying.

Vegetal cover consists of scattered juniper, with numerous shrubs and grasses.

Association 25

This soil is in the sandy, mixed, mesic family of Ustollic Calciorthids. It is forming on a large tilted lacustrine deposit in alluvium derived from tuffaceous volcanic rocks. Slopes are 5 to 25 percent at elevations of 5,200 to 6,000 feet on all exposures.

This soil is deep, has a gravelly loamy sand surface layer, and fine sand subsoil and substratum (C horizon).

This soil will hold about 2 inches of water available to plants in a five-foot profile. The soil is moderately to severely eroded, erosion hazard is high, permeability is moderate and surface runoff is slow. The average annual precipitation is 11 to 14 inches.

This soil is suitable for range; however, vegetal cover must be maintained or improved to control erosion.

Vegetal cover consists of a heavy stand of juniper and scattered big sagebrush and oakbrush.

Association 26

This soil is in the sandy-skeletal, mixed family of Aridic Pachic Haploborolls. It is forming on a cinder cone in residuum derived from volcanic cinders. Slopes are 40 to 60 percent at elevations of 5,800 to 6,200 feet on all exposures.

This soil is deep, has a very gravelly loamy sand surface layer, and subsoil.

This soil will hold about 3 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderate, permeability is rapid and surface runoff is medium. The average annual precipitation is 12 to 13 inches.

This soil is suitable as a source for gravel.

Vegetal cover consists of juniper, big sagebrush, serviceberry and cheatgrass.

Association 27

This soil is in the clayey, mixed, mesic family of Lithic Argiustolls. It is forming on a smooth surface of a basalt flow in residuum derived from basalt rocks. Slopes are 5 to 10 percent at elevations of about 6,000 feet on all exposures.

This soil is shallow, has a gravelly loam surface layer, and a gravelly silty clay subsoil (B horizon) over bedrock at about 1 foot.

This soil will hold about 1.5 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderate, permeability is moderate and surface runoff is medium. The average annual precipitation is 12 to 20 inches.

This soil is highly suitable for range.

Vegetal cover consists of juniper, big sagebrush, and cheatgrass.

Association 28

This soil is in the loamy, mixed, mesic family of Lithic Argiustolls. It is forming on the edge of a basalt flow in residuum derived from basalt rocks. Slopes are up to 45 percent at elevations of 5,000 to 6,200 feet on all exposures.

This soil is shallow, has a silt loam surface layer, and a silty clay loam subsoil (B horizon) over bedrock at about 1 foot.

This soil will hold about 2 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderate, permeability is moderate and surface runoff is medium. The average annual precipitation is 12 to 14 inches.

This soil is suitable for watershed with limited grazing.

Vegetal cover is juniper, big sagebrush, oakbrush and cheatgrass.

Association 29

This soil is in the loamy-skeletal, mixed family of Lithic Argiborolls. It is forming on the slopes of a basalt flow in residuum derived from basalt rocks. Slopes are up to 45 percent at elevations of 6,000 to 7,000 feet on all exposures.

This soil is shallow, has a stony loam surface layer, and a very cobbly clay loam subsoil (B horizon) over bedrock at about 1½ feet.

This soil will hold about 2 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderately high, permeability is moderately slow and surface runoff is rapid. The average annual precipitation is 12 to 20 inches.

This soil is suitable for range with grazing limited mainly to the stream bottoms and lower slopes. Vegetation must be maintained to control sheet erosion.

Vegetal cover consists of serviceberry, big sagebrush, oakbrush and cheatgrass.

Association 30

This soil is in the loamy, mixed, mesic family of Lithic Haplustolls. It is forming on shallow sedimentary basins and uplifted lacustrine deposits in alluvium derived from weakly cemented sands, silts and clays. Slopes are 10 to 20 percent at elevations of 5,600 to 6,000 feet on all exposures.

This soil is shallow, has a sandy clay loam surface layer over bedrock at about 6 inches.

This soil will hold about 1 inch of water available to plants. The soil is moderately to severely eroded, erosion hazard is high, permeability is slow and surface runoff is rapid to very rapid. The average annual precipitation is 11 to 15 inches.

This soil is suitable for watershed. Plant cover needs to be re-established to prevent further erosion.

Vegetal cover consists of juniper, big sagebrush, bitterbrush, junegrass and cheatgrass.

Association 31

This soil is in the sandy-skeletal, mixed, mesic family of Lithic Haplustolls. It is forming on a narrow uplifted ridge in residuum derived from rhyolitic ignimbrite rocks. Slopes are about 30 percent at elevations of 5,800 to 6,200 feet on northerly exposures.

This soil is shallow, has a gravelly loamy sand surface layer over bedrock at about 6 inches.

This soil will hold about 0.3 inches of water available to plants. The soil is moderately eroded and gullied, erosion hazard is moderately

high, permeability is moderately rapid and surface runoff is rapid. The average annual precipitation is 15 to 16 inches.

This soil is suitable for watershed.

Association 32

This soil is in the loamy-skeletal, mixed family of Lithic Haploborolls. It is forming on mountain slopes in residuum and colluvium derived from rhyolitic rocks. Slopes are 45 to 60 percent at elevations of 6,000 to 7,000 feet on all exposures.

This soil is shallow, has a gravelly loamy sand surface layer, about 3 inches thick and a gravelly sandy loam subsoil over bedrock at about 1½ feet.

This soil will hold about 1 inch of water available to plants. The soil is moderately eroded, erosion hazard is high, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 12 to 15 inches.

This soil is suitable for watershed. It is too steep for grazing.

Vegetal cover consists of juniper, big sagebrush, ceanothus (buckbrush), junegrass and cheatgrass.

Association 33

This soil is in the coarse-loamy, mixed, mesic family of Aridic Haplustolls. It is forming on a small sedimentary basin in material derived from weakly cemented sands. Slopes are 0 to 15 percent at elevations of 6,000 to 6,200 feet on all exposures.

This soil is deep, has a gravelly fine sandy loam surface layer, a very fine sandy loam subsoil and stratified sand, silt and clay C horizons.

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderate, permeability is moderately rapid and surface runoff is medium to rapid. The average annual precipitation is 12 to 15 inches.

This soil is suitable for range, but erosion control work is needed on gullies. Vegetal cover consists of juniper, big sagebrush and blue grama.

Association 34

This soil is in the coarse-loamy, mixed, mesic family of Typic Haplustolls. It is forming on low hills in residuum derived from tuffaceous volcanic rocks. Slopes are up to 30 percent at elevations of about 6,200 feet on all exposures.

This soil is moderately deep to deep, has a sandy surface layer about 2 inches thick and a sandy loam subsoil.

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderate, permeability is moderate and surface runoff is medium. The average annual precipitation is 12 to 14 inches.

This soil is suitable for limited grazing along the stream bottoms.

Association 35

This soil is in the loamy, mixed, mesic family of Lithic Haplustolls. It is forming on a plateau in material derived from undifferentiated volcanic rocks. Slopes are 0 to 15 percent at elevations of 6,000 to 6,400 feet on all exposures.

This soil is very shallow, has a gravelly sandy clay loam surface layer, and a gravelly sandy clay subsoil over bedrock at about 6 inches.

This soil will hold about 1 inch of water available to plants. The soil is moderately eroded, erosion hazard is high, permeability is slow and surface runoff is rapid to very rapid. The average annual precipitation is 13 to 14 inches.

This soil is suitable for range if properly managed to control erosion. Vegetal cover consists of pinyon pine, juniper, big sagebrush and junegrass.

Association 36

This soil is in the loamy-skeletal, mixed, mesic nonacid family of Typic Ustorthents. It is forming on long low parallel hills in material derived from mixed sedimentary rocks. Slopes are 9 to 30 percent at elevations of 6,000 to 6,400 feet on easterly and westerly exposures.

This soil is moderately deep, has a gravelly sandy loam surface layer, and a very gravelly sandy loam subsoil, over bedrock at about 2 feet.

This soil will hold about 1.5 to 2 inches of water available to plants above the bedrock. The soil is slightly eroded, erosion hazard is moderately low, permeability is moderate and surface runoff is medium. The average annual precipitation is 14 to 15 inches.

The soil is highly suitable for range if vegetal cover is maintained.

Vegetal cover consists of juniper, big sagebrush, junegrass and cheatgrass.

Association 37

This soil is in the fine-loamy, mixed family of Aridic Argiborolls. It is forming on low mountains and benches in material derived from volcanic rocks. Slopes are 10 to 60 percent at elevations of 6,000 to 6,600 feet on all exposures.

This soil is moderately deep and deep, has a coarse sandy loam surface layer, and a gravelly sandy clay loam subsoil (B horizon).

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is high, permeability is slow and surface runoff is rapid. The average annual precipitation is 13 to 16 inches.

This soil is suitable for range with grazing limited to the more gentle slopes.

Vegetal cover consists of juniper, pinyon pine, forbs and grasses.

Association 38

This soil is in the loamy, mixed, frigid family of Lithic Ustorthents. It is forming on upper mountain slopes in material derived from undifferentiated volcanic rocks. Slopes are up to 80 percent at elevations of about 6,400 feet on all exposures.

This soil is shallow, has a stony silt loam surface layer, and cobbly clay loam subsoil over bedrock at less than 20 inches.

This soil will hold about 2 inches of water available to plants. The soil is severely eroded, erosion hazard is high, permeability is moderate to slow and surface runoff is rapid. The average annual precipitation is 13 to 14 inches.

This soil is suitable for watershed. It is too steep for grazing.

Association 39

This soil consists of Rock land on a severely eroded sedimentary basin in material derived from moderately cemented sandstone rocks. Slopes are 0 to 40 percent at elevations of about 6,000 feet on all exposures.

This soil is very shallow, has a gravelly sand surface layer, underlain at about 3 inches with sandstone bedrock.

This soil will hold about 0.1 inches of water available to plants. The soil is moderately eroded, erosion hazard is high, permeability is very rapid and surface runoff is very rapid. The average annual precipitation is 13 to 14 inches.

This soil is suitable for watershed.

Association 40

This soil is in the clayey, mixed family of Aridic Lithic Argiborolls. It is forming on steep mountain slopes in material derived from sedimentary rocks. Slopes are 10 to 45 percent at elevations of 6,000 to 7,000 feet on all exposures.

This soil is shallow, has a loam surface layer, and a heavy clay loam subsoil (B horizon) over bedrock at less than 20 inches.

This soil will hold about 3 inches of water available to plants. The soil is moderately eroded and gullied, erosion hazard is moderately high, permeability is moderately slow and surface runoff is rapid. The average annual precipitation is 12 to 15 inches.

This soil is suitable for range.

Vegetal cover consists of juniper, pinyon pine, big sagebrush, oakbrush, serviceberry and cheatgrass.

Association 41

This soil is in the loamy-skeletal, mixed, nonacid, frigid family of Lithic Ustic Torriorthents. It is forming on low hills in residuum derived from basalt and andesite rocks. Slopes are 10 to 40 percent at elevations of 6,200 to 7,000 feet on all exposures.

This soil is shallow, has a gravelly clay loam surface layer, and a gravelly silty clay loam subsoil (B horizon) over bedrock at about 1 foot.

This soil will hold about 1.5 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is slow and surface runoff is rapid. The average annual precipitation is 12 to 14 inches.

This soil is suitable for range.

Vegetal cover consists of juniper, big sagebrush, rubber rabbitbrush and several grasses.

Association 42

This soil is in the loamy, mixed, calcareous, frigid family of Lithic Ustic Torriorthents. It is forming on mountain slopes in material derived from rhyolitic, dacite and quartz latite rocks. Slopes are 20 to 60 percent at elevations of 6,000 to 6,400 feet on all exposures.

This soil is very shallow, has a loam surface layer over bedrock at about 8 inches.

This soil will hold about 1 inch of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is slow and surface runoff is rapid. The average annual precipitation is 11 to 14 inches.

This soil is suitable for range for wildlife.

Vegetal cover consists of pinyon pine, juniper, big sagebrush and scattered grasses.

Association 43

This soil is in the clayey-skeletal mixed family of an undetermined subgroup (probably Pachic Cryoborolls). It is forming on a plateau top in material derived from intermediate volcanic and limestone rocks. Slopes are about 25 percent at elevations of 10,000 to 11,000 feet.

This soil is deep, has a clay loam surface layer, a cobbly clay subsoil (B horizon) and cobbly or very cobbly clay loam C horizons.

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderately low, permeability is moderate and surface runoff is medium. The average annual precipitation is 35 to 40 inches.

This soil is suitable for range and recreation use.

Association 44

This soil is in the sandy-skeletal, mixed family of Pachic Cryoborolls. It is forming on steep canyon slopes in material derived from sandstone and sandy shale rocks. Slopes are about 60 percent at elevations of 8,200 to 9,500 feet on all exposures.

This soil is deep, has a sandy loam surface layer, a gravelly sandy loam subsoil (B horizon) and a gravelly sand C horizon.

This soil will hold about 4 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderate, permeability is moderately rapid, and surface runoff is medium. The average annual precipitation is 22 to 35 inches.

This soil is suitable for timber production and some grazing.

Association 45

This soil is in the clayey-skeletal, mixed, nonacid family of Lithic Cryorthents. It is forming on talus and other colluvial slopes in colluvium derived from sedimentary rocks. Slopes are up to 80 percent at elevations of 8,000 to 10,000 feet on all exposures.

This soil is very shallow, has a very gravelly clay loam surface layer over bedrock at about 8 inches.

This soil will hold about 1 inch of water available to plants. The soil is moderately to severely eroded and gullied, erosion hazard is high, permeability is slow and surface runoff is very rapid. The average annual precipitation is 22 to 40 inches.

This soil is suitable for watershed as it is too steep for harvesting timber or grazing.

Association 46

This soil consists of Rock outcrops. It is on an eroding fault scarp in material derived from sedimentary rocks. Slopes are up to vertical at elevations of 9,000 to 10,000 feet on all exposures.

This soil is very shallow and the erosion keeps pace with soil formation.

The soil is severely eroded, erosion hazard is very high, permeability is slow and surface runoff is very rapid. The average annual precipitation is 35 to 40 inches.

This material is suitable for watersheds and scenic value within Cedar Breaks National Monument. This area produces large floods from summer storms.

Association 47

This soil is in the fine-loamy, mixed family of Lithic Mollic Cryoboralfs. It is forming on smooth colluvial slopes in material derived from sandstone and sandy shale. Slopes are 60 to 80 percent at elevations of 8,000 to 9,000 feet on east and west exposures.

This soil is shallow, has a loam surface layer, about 1 inch thick and a clay loam subsoil (B horizon) over bedrock at about 20 inches.

This soil will hold about 4 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is moderately slow and surface runoff is medium to rapid. The average annual precipitation is 20 to 30 inches.

This soil is suitable for watershed and is too steep for grazing.

Association 48

This soil is in the fine-loamy, mixed family of Argic Pachic Cryoborolls. It is forming on broad ridge tops and plateaus in material derived from sandstone and sandy shale rocks. Slopes are up to 15 percent at elevations of 9,000 to 9,400 feet on all exposures.

This soil is moderately deep, has a sandy loam surface layer, and a gravelly clay loam subsoil (B horizon) over bedrock at about 2 feet.

This soil will hold about 3 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderate, permeability is moderately rapid and surface runoff is medium. The average annual precipitation is 20 to 30 inches.

This soil is suitable for grazing, recreation and aspen timber production.

Association 49

This soil is in the fine-loamy, mixed family of Argic Cryoborolls. It is forming on an erosional scarp capped by volcanic rock in material derived from limestone, coarse sediments and colluvium from volcanic rocks. Slopes are 25 to 80 percent at elevations of 9,000 to 10,000 feet on southwesterly exposures.

This soil is deep to moderately deep, has a loam surface layer, and gravelly clay loam subsoil (B horizon).

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately low, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 35 to 40 inches.

This soil is suitable for limited grazing on the less steep slopes.

Association 50

This soil is in the fine-loamy, mixed family of Argic Cryoborolls. It is forming on talus and colluvial slopes in material derived from undifferentiated tertiary volcanic rocks. Slopes are up to 30 percent at elevations of 9,000 to 10,000 feet on all exposures.

This soil is moderately deep to deep, has a loam surface layer, and a gravelly clay loam (B horizon).

This soil will hold about 9 inches of water available to plants in a five-foot profile. The soil is not eroded, erosion hazard is low, permeability is very rapid and surface runoff is medium. The average annual precipitation is 20 to 40 inches.

This soil is suitable for timber production and excellent watershed. Soil is highly stable.

Association 51

This land consists of Rock outcrops, steep cliffs and talus slopes. It is on an eroded fault scarp in material derived from intermediate volcanic rocks. Slopes are up to vertical at elevations of 9,000 to 10,000 feet on northwesterly exposures.

The soil is gravelly loam between boulders.

This material will hold about 0.2 inches of water available to plants. It is not eroded, erosion hazard is low, permeability is very rapid and surface runoff is medium. The average annual precipitation is 20 to 40 inches.

This land is highly suitable for watershed.

Association 52

This soil is in the fine-silty, mixed family of Aquic Pachic Cryoborolls. It is forming on alluvial fans and basins in alluvium derived from sandstone and sandy shale rocks. Slopes are up to 10 percent at elevations of 8,000 to 9,000 feet on all exposures.

This soil is deep, somewhat poorly drained, has a silt loam surface layer, and a silty clay loam subsoil (B horizon).

This soil will hold about 11 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately low, permeability is moderate to moderately slow and surface runoff is medium. The average annual precipitation is 18 to 25 inches.

This soil is highly suitable for grazing and recreation.

Association 53

This soil is in the loamy, mixed family of Lithic Cryoborolls. It is forming on a cap of volcanic rock that overlies limestone in material derived from intermediate volcanic and limestone rocks. Slopes are up to 60 percent at elevations of 8,000 to 9,000 feet on all exposures.

This soil is shallow, has a gravelly sandy loam surface layer, and a gravelly sandy loam subsoil, over bedrock at about 20 inches.

This soil will hold about 2 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is moderate and surface runoff is medium. The average annual precipitation is 18 to 20 inches.

This soil is suitable for wildlife habitat and watershed.

Association 54

This soil association consists of 40 percent in the fine-loamy, mixed family of Argic Cryoborolls; 40 percent in the coarse-loamy, mixed family of Typic Cryoborolls; and 20 percent in the coarse-loamy, mixed family of Pachic Haploborolls.

They are forming on narrow ridges in colluvium and residuum derived from undifferentiated tertiary volcanic rocks. Slopes are 60 to 80 percent at elevations of 6,600 to 8,800 feet on all exposures.

The soils are deep to moderately deep, have a gravelly sandy loam surface layer, and nongravelly to gravelly sandy loam to clay loam subsoil (B horizon) and very gravelly sandy loam C horizons.

These soils will hold about 6 inches of water available to plants in a five-foot profile. The soils are moderately eroded, erosion hazard is moderately high, permeability is moderately slow and surface runoff is rapid. The average annual precipitation is 18 to 20 inches.

These soils are suitable for watershed and wildlife habitat.

Association 55

This soil is in the fine-silty, mixed family of Typic Argiborolls. It is forming on smooth parallel ridges in material derived from sedimentary rocks. Slopes are up to 45 percent at elevations of 7,000 to 8,000 feet on all exposures.

This soil is deep, has a gravelly loam surface layer, and a clay loam subsoil (B horizon).

This soil will hold about 11 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderate, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 18 to 20 inches.

This soil is suitable for range and watershed.

Association 56

This soil is in the loamy-skeletal, mixed family of Lithic Argiborolls. It is forming on mountain slopes in alluvium derived from undifferentiated tertiary volcanic rocks. Slopes are 40 to 60 percent at elevations of 7,000 to 8,000 feet on all exposures.

This soil is shallow, has a gravelly sandy loam surface layer, and very gravelly sandy clay loam subsoil (B horizon) over bedrock at about 1½ feet.

This soil will hold about 2 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderate, permeability is moderate to moderately slow and surface runoff is medium. The average annual precipitation is 16 to 20 inches.

This soil is suitable for watershed with limited grazing on the less steep slopes.

Association 57

This soil is in the loamy-skeletal, mixed, calcareous, frigid family of Typic Ustorthents. It is forming on mountain slopes in material derived from mixed sedimentary rocks. Slopes are up to vertical at elevations of 7,000 to 7,500 feet on all exposures.

This soil is moderately deep, has a very gravelly loam surface layer, and very gravelly clay loam subsoil over bedrock at about 3 feet.

This soil will hold about 3 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is slow and surface runoff is rapid to very rapid. The average annual precipitation is 16 to 20 inches.

This soil is suitable for recreation. This is a source area for floods.

Association 58

This soil is in the loamy-skeletal, mixed family of Lithic Cryoborolls. It is forming on mountain slopes in material derived from mixed sedimentary and volcanic rocks. Slopes are up to 80 percent at elevations of 7,800 to 8,400 feet on all exposures.

This soil is shallow, has a very gravelly loam surface layer over volcanic bedrock at about $1\frac{1}{2}$ feet.

This soil will hold about 1 inch of water available to plants. The soil is slightly eroded, erosion hazard is moderate, permeability is moderately slow and surface runoff is medium to rapid. The average annual precipitation is 18 to 22 inches.

This soil is suitable for recreation and some grazing on the less steep slopes.

Association 59

This soil is in the loamy, mixed family of Argic Lithic Cryoborolls. It is forming on landslide or slump areas in material derived from undifferentiated tertiary volcanic rocks. Slopes are up to 60 percent at elevations of 8,000 to 8,400 feet on all exposures.

This soil is shallow, has a gravelly loam surface layer, and a gravelly clay loam subsoil (B horizon) over bedrock at about $1\frac{1}{2}$ feet.

This soil will hold about 3 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderately high, permeability is moderately rapid and surface runoff is medium. The average annual precipitation is 20 to 22 inches.

This soil is suitable for timber, grazing and recreation on the more gentle slopes.

Association 60

This soil is in the clayey-skeletal, mixed family of Argic Pachic Cryoborolls. It is forming on long semi-parallel ridges in material derived from volcanic rocks. Slopes are up to 80 percent at elevations of 8,000 to 10,000 feet on northerly and southerly exposures.

This soil is deep, has a stony silt loam surface layer, and very cobbly clay subsoil (B horizon).

This soil will hold about 7 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderate, permeability is moderately rapid and surface runoff is medium. The average annual precipitation is 25 to 30 inches.

This soil is suitable for timber production on the northerly exposures. The southerly slopes are too steep for grazing and bottoms are overgrazed. The streams have potential for recreation.

Vegetal cover consists of Douglasfir, ponderosa pine and scattered shrubs.

Association 61

This soil is in the loamy-skeletal, mixed family of Typic Argiborolls. It is forming on pediment-like slopes in material derived from old alluvial deposits. Slopes are up to 15 percent at elevations of 7,000 to 8,000 feet on all exposures, but mainly westerly.

This soil is deep, has a stony clay loam surface layer, and a cobbly clay loam subsoil (B horizon).

This soil will hold about 9 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately high, permeability is moderately slow and surface runoff is medium to rapid. The average annual precipitation is 18 to 30 inches.

This soil is suitable for range and wildlife habitat.

Vegetal cover consists of grasses and big sagebrush, with scattered juniper.

Association 62

This soil is in the sandy, mixed family of Pachic Haploborolls. It is forming on mountain slopes in material derived from volcanic rocks. Slopes are up to 70 percent at elevations of 7,200 to 7,600 feet on all exposures.

This soil is moderately deep to deep, has a sand surface layer, and sand subsoil.

This soil will hold about 4 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderate, permeability is rapid and surface runoff is medium. The average annual precipitation is 20 to 25 inches.

This soil is suitable for limited grazing and recreation.

Vegetal cover consists of pinyon pine and juniper with some big sagebrush and grasses.

Association 63

This soil is in the loamy-skeletal, mixed family of Lithic Argiborolls. It is forming on small eroded hills in material derived from igneous (breccia) rocks. Slopes are up to 45 percent at elevations of 7,200 to 7,600 feet on all exposures.

This soil is shallow, has a stony loam surface layer, and a very cobbly clay loam subsoil (B horizon) over bedrock at about 1½ feet.

This soil will hold about 2 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderate, permeability is moderate to moderately slow and surface runoff is rapid. The average annual precipitation is 20 to 25 inches.

This soil is suitable for limited grazing on the less steep slopes.

Vegetal cover consists of juniper, mountainmahogany and big sagebrush.

Association 64

This soil is in the loamy-skeletal, mixed family of Aridic Argiborolls. It is forming on mountain slopes in material derived from volcanic rocks. Slopes are up to 15 percent at elevations of about 7,600 feet on all exposures.

This soil is deep, has a gravelly loam surface layer, and a cobbly clay loam subsoil (B horizon).

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderately high, permeability is moderate to moderately slow and surface runoff is medium. The average annual precipitation is 20 to 25 inches.

This soil is suitable for grazing.

The vegetal cover consists of grass with some big sagebrush.

Association 65

This soil is in the mixed, nonacid, frigid family of Typic Ustipsamments. It is forming in a valley in alluvium derived from mixed rocks. Slopes are 5 to 10 percent at elevations of about 8,000 feet on southerly to southwesterly exposures.

This soil is moderately deep, has a sand surface layer, and sand subsoil over bedrock at about 3 feet.

This soil will hold about 2 to 3 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderately low, permeability is rapid to very rapid and surface runoff is medium. The average annual precipitation is 25 to 30 inches.

This soil is suitable for range.

Vegetal cover consists of aspen and some ponderosa pine, Engel-man spruce and scattered shrubs.

Association 66

This soil is in the loamy-skeletal, mixed family of Argic Pachic Cryoborolls. It is forming on a recent landslide in material derived from volcanic rocks. Slopes are 10 to 80 percent at elevations of 7,600 to 9,000 feet on all exposures.

This soil is deep, has a stony sandy loam surface layer, and a very cobbly clay loam subsoil (B horizon) to about 4 feet.

This soil will hold about 4 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderate, permeability is moderately rapid and surface runoff is medium. The average annual precipitation is 20 to 30 inches.

This soil is suitable for recreation and fair timber production.

Vegetal cover consists of fir, spruce, aspen and Douglasfir.

Association 67

This soil is in the loamy-skeletal, mixed family of Argic Cryoborolls. It is forming on long parallel ridges in material derived from conglomerate and volcanic rocks. Slopes are 20 to 30 percent

on the ridges and 60 to 80 percent on the side slopes at elevations of 8,000 to 10,000 feet on northeast and southwest exposures.

This soil is deep, has a loam surface layer, and a very cobbly clay loam subsoil (B horizon).

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderately high, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 20 to 30 inches.

This soil is suitable for limited grazing on the flatter ridge tops. Timber is fair to poor in patches on very steep slopes.

Association 68

This soil is in the loamy-skeletal, mixed family of Typic Argiborolls. It is forming on lower mountain slopes in material derived from volcanic rocks. Slopes are up to 60 percent at elevations of 7,000 to 8,200 feet on all exposures.

This soil is deep, has a gravelly clay loam surface layer, a very gravelly clay loam subsoil (B horizon) and a very gravelly clay loam C horizon.

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately high to high, permeability is moderately slow and surface runoff is rapid. The average annual precipitation is 15 to 30 inches.

This soil is suitable for limited grazing on the more gentle slopes and mining in numerous claims throughout the area.

Vegetal cover consists of mountainmahogany, juniper, big sagebrush, oakbrush and cheatgrass.

Association 69

This soil is in the loamy-skeletal, mixed family of Lithic Cryoborolls. It is forming on mountain slopes in material derived from volcanic (including latite) rocks. Slopes are 60 to 80 percent at elevations of 7,000 to 9,000 feet on all exposures.

This soil is shallow, has a very stony clay loam surface layer, and a very cobbly clay loam subsoil over bedrock at about 1½ feet.

This soil will hold about 2 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderately high,

permeability is slow and surface runoff is rapid. The average annual precipitation is 15 to 25 inches.

This soil is suitable for recreation and big game habitat.

Association 70

This soil is in the clayey-skeletal, mixed family of Typic Calciborolls. It is forming on alluvial fans and valley fill in alluvium derived from mixed rocks. Slopes are 5 to 10 percent and smooth at elevations of 7,000 to 7,400 feet on westerly exposures.

This soil is deep, has a gravelly sandy loam surface layer, and a very cobbly clay subsoil.

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately high, permeability is slow and surface runoff is rapid. The average annual precipitation is 15 to 18 inches.

This soil is suitable for grazing if chained and reseeded.

Vegetal cover consists of pinyon pine and juniper with some sage and oakbrush.

Association 71

This soil is in the loamy, mixed family of Lithic Haploborolls. It is forming on mountain slopes in residuum and colluvium derived from latite rocks. Slopes are up to 80 percent at elevations of 6,600 to 7,400 feet.

This soil is very shallow, has a very stony sandy loam surface layer, and a clay loam subsoil over bedrock at about 8 inches.

This soil will hold about 1 inch of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is moderate and surface runoff is medium. The average annual precipitation is 18 to 20 inches.

This soil is suitable for limited grazing on the less steep slopes.

Vegetal cover consists of pinyon pine, juniper, big sagebrush, oakbrush, serviceberry and mountainmahogany.

Association 72

This soil is in the sandy-skeletal, mixed, calcareous family of Typic Cryorthents. It is forming on mountain slopes in residuum, colluvium and talus derived from quartzite, sandstone and conglomerate rocks. Slopes are up to 100 percent at elevations of 8,000 to 10,000 feet on all exposures.

This soil is deep, has a very stony sandy loam surface layer, and a very cobbly sand subsoil and substratum (C horizons).

This soil will hold about 4 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately low, permeability is rapid and surface runoff is medium. The average annual precipitation is 22 to 30 inches.

This soil is suitable for recreation. It is too steep for grazing.

Vegetal cover consists of mountainmahogany, and some pinyon pine and juniper on the southerly to westerly slopes and white fir and Douglasfir on the northerly exposures.

Association 73

This soil is in the loamy-skeletal, siliceous family of Typic Haploborolls. It is forming on mountain slopes in residuum, colluvium and talus derived from sandstone rocks. Slopes are more than 80 percent at elevations of 6,000 to 9,000 feet.

This soil is moderately deep, has a very cobbly sandy loam surface layer, and a very cobbly sandy loam subsoil over bedrock at about 2 feet.

This soil will hold about 2 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderately high, permeability is rapid and surface runoff is medium. The average annual precipitation is 15 to 25 inches.

This soil is suitable for watershed and recreation.

Association 74

This soil is in the fine-loamy, mixed, frigid family of Typic Argixerolls. It is forming on large coalescing alluvial fans in alluvium derived from mixed rocks. Slopes are up to 45 percent at elevations of 5,600 to 7,000 feet on westerly exposures.

This soil is deep, has a stony loam surface layer, a cobbly clay loam subsoil (B horizon) and a cobbly clay loam C horizon.

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately high, permeability is moderate and surface runoff is medium to high. The average annual precipitation is 15 to 25 inches.

This soil is highly suitable for grazing and many areas can be reseeded.

Vegetal cover consists of juniper, big sagebrush, oakbrush and squawbush.

Association 75

This unit consists of about 50 percent in the loamy-skeletal, mixed, frigid family of Aridic Lithic Haploxerolls; 40 percent in the fine-loamy, mixed, frigid family of Typic Xerorthents; and 10 percent in the loamy, mixed, frigid family of Lithic Xerorthents. They are forming on tilted beds of sedimentary rock in material derived from mixed sedimentary and volcanic rocks.

Slopes are 30 to 75 percent at elevations of 6,000 to 8,000 feet on all exposures.

The Aridic Lithic Haploxerolls are very shallow with very cobbly sandy loam over bedrock at about 6 inches.

The Typic Xerorthents are deep with gravelly clay loam surface layers and clay loam subsoils.

The Lithic Xerorthents are very shallow with about 2 inches of clay loam over bedrock.

The deep soils will hold about 5 inches and the very shallow about $\frac{1}{2}$ inch of water available to plants.

The soils are severely eroded, the erosion hazard is high and the runoff is rapid. The average annual precipitation is 14 to 20 inches.

These soils are suitable for watershed and very limited grazing.

Association 76

This soil is in the loamy-skeletal, mixed family of Aridic Argiborolls. It is forming on ridges in residuum derived from conglomerate and volcanic rocks. Slopes are up to 60 percent at elevations of 6,600 to 7,200 feet on all exposures.

This soil is deep, has a gravelly sandy loam surface layer, and a very gravelly clay loam subsoil (B horizon).

This soil will hold about 3 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately high, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 14 to 18 inches.

This soil is suitable for some recreation and watershed. Most of it is too steep for grazing.

Vegetal cover consists of pinyon pine, juniper, big sagebrush and oakbrush.

Association 77

This soil is in the fine-loamy, mixed, frigid, calcareous family of Typic Xerorthents. It is forming on mountain slopes in residuum and colluvium derived from rhyolitic rocks. Slopes are about 80 percent at elevations of 7,000 to 8,000 feet on all exposures.

This soil is deep, has a gravelly clay loam surface layer, a gravelly clay loam subsoil and substratum (C horizon).

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is severely eroded, erosion hazard is moderately high, permeability is slow, and surface runoff is medium to rapid. The average annual precipitation is 16 to 25 inches.

This soil is suitable for watershed and recreation.

Vegetal cover consists of pinyon pine, juniper, mountainmahogany, oakbrush and cheatgrass.

Association 78

This soil is in the fine-loamy, mixed family of Argic Cryoborolls. It is forming on mountain slopes in residuum and colluvium derived from volcanic rocks. Slopes are 40 to 80 percent at elevations of 6,200 to 9,000 feet on mainly westerly exposures.

This soil is deep, has a clay loam surface layer, a cobbly clay loam subsoil (B horizon) and a sandy clay loam C horizon.

This soil will hold about 11 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderate, permeability is moderate and surface runoff is medium. The average annual precipitation is 15 to 17 inches.

This soil is suitable for grazing on the less steep slopes, watershed and sulfur mining.

Vegetal cover consists of juniper, mountainmahogany, big sagebrush, oakbrush and grasses.

Association 79

This soil is in the loamy-skeletal, mixed family of Aridic Entic Haploborolls. It is forming on stream terraces in alluvium derived from volcanic rocks. Slopes are about 5 percent at elevations of 6,400 to 7,000 feet on all exposures.

This soil is deep, has a gravelly loam surface layer, and a very cobbly clay loam subsoil.

This soil will hold about 8 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderate, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 15 to 18 inches.

This soil is suitable for grazing if reseeded, and sulfur mining.

Vegetal cover consists of juniper, some pinyon pine, oakbrush, big sagebrush and cheatgrass.

Association 80

This soil is in the loamy-skeletal, mixed family of Aridic Argiborolls. It is forming on a bench in alluvium and colluvium derived from sandstone and siltstone rocks. Slopes are 10 to 30 percent at elevations of 6,000 to 7,000 feet on westerly exposures.

This soil is deep, has a very fine sandy loam surface layer, and a very cobbly clay loam subsoil (B horizon).

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderate, permeability is moderate to moderately slow and surface runoff is medium. The average annual precipitation is 15 to 22 inches.

This soil is suitable for grazing and much of the area has been reseeded.

Vegetal cover consists of crested wheatgrass, juniper, mountainmahogany, oakbrush and big sagebrush.

Association 81

This soil is in the loamy-skeletal, mixed, frigid, calcareous family of Ustic Torriorthents. It is forming on tilted beds of sedimentary rock in material derived from sandstone, siltstone, mudstone, limestone and volcanic rocks. Slopes are about 80 percent at elevations of 5,600 to 7,000 feet on all exposures.

This soil is moderately deep, has a stony silt loam surface layer, and a very cobbly clay loam subsoil over bedrock at about 2 feet.

This soil will hold about 3 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is high, permeability is moderately slow and surface runoff is rapid to very rapid. The average annual precipitation is 14 to 20 inches.

This soil is suitable for watershed with limited grazing in the stream bottoms.

Vegetal cover consists of juniper, oakbrush, big sagebrush and cheatgrass.

Association 82

This soil is in the loamy-skeletal, mixed family of Argic Cryoborolls. It is forming on a dissected fault scarp in material derived from intermediate volcanic rocks. Slopes are 20 to 80 percent at elevations of 8,200 to 9,800 feet on all exposures.

This soil is moderately deep, has a cobbly sandy loam surface layer, and a very cobbly clay loam subsoil (B horizon).

This soil will hold about 6 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderately low, permeability is moderate and surface runoff is medium. The average annual precipitation is 22 to 35 inches.

This soil is suitable for watershed and limited grazing on the less steep slopes.

Association 83

This soil is in the loamy-skeletal, mixed family of Cryochrepts. It is forming on concave benches in material derived from volcanic rocks. Slopes are 5 to 10 percent at elevations of 9,000 to 9,700 feet on all exposures.

This soil is deep, has a loam surface layer, and a very cobbly clay loam subsoil to more than 3 feet.

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderate to high, permeability is moderate and surface runoff is medium. The average annual precipitation is 28 to 32 inches.

This soil is suitable for grazing in the meadows and timber in the conifers.

Association 84

This soil is in the sandy-skeletal, mixed family of Cryorthents. It is forming on mountain slopes in material derived from rhyolitic rocks. Slopes are 50 to 70 percent at elevations of 8,000 to 9,000 feet on all exposures.

This soil is moderately deep to deep, has a very stony loam surface layer, and a very cobbly loamy sand subsoil.

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderately high to high, permeability is moderately slow and surface runoff is rapid. The average annual precipitation is 18 to 40 inches.

This soil is suitable for watershed, timber production, recreation and limited grazing.

Association 85

This soil is in the coarse-loamy, mixed family of Pachic Cryoborolls. It is forming on periglacial uplands on ridges in colluvium and alluvium derived from volcanic tuffs and rhyolitic rocks. Slopes are up to 45 percent at elevations of 9,000 to 11,000 feet on all exposures.

This soil is deep, has a gravelly coarse sandy loam surface layer, a gravelly sandy clay loam subsoil (B horizon) and a gravelly coarse sandy loam C horizon.

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is slightly eroded, erosion hazard is moderately low, permeability is moderate and surface runoff is medium. The average annual precipitation is 20 to 40 inches.

This soil is suitable for timber and recreation. Vegetal cover consists of Engelmann spruce, white fir, aspen, forbs and grasses.

Association 86

This soil is in the loamy-skeletal, mixed family of Argic, Lithic Cryoborolls. It is forming on ridges and knolls in residuum derived from rhyolitic rocks. Slopes are 40 to 80 percent at elevations of 9,800 to 12,100 feet on all exposures.

This soil is shallow, has a very stony loam surface layer, and a very cobbly heavy loam subsoil (B horizon) over bedrock at about 20 inches.

This soil will hold about 1 inch of water available to plants. The soil is slightly eroded, erosion hazard is high, permeability is moderately slow and surface runoff is rapid. The average annual precipitation is 28 to 40 inches.

This soil is suitable for watershed and recreation.

Association 87

This soil is in the sandy-skeletal, mixed, nonacid family of Cryorthents. It is forming on periglacial uplands with small meadows and ridges in material derived from volcanic tuffs and rhyolitic rocks. Slopes are 30 to 50 percent at elevations of 9,000 to 12,000 feet on all exposures.

This soil is moderately deep, has a gravelly loamy sand surface layer, and a very gravelly sand subsoil to about 2 feet.

This soil will hold about 1 inch of water available to plants. The soil is slightly eroded, erosion hazard is high, permeability is moderately rapid and surface runoff is medium. The average annual precipitation is 35 to 40 inches.

This soil is suitable for watershed and recreation.

Association 88

This soil is in the clayey-skeletal, mixed, frigid family of Argixerolls. It is forming on ridges in residuum derived from intermediate volcanic, limestone and calcareous sandstone. Slopes are 40 to 70 percent at elevations of 7,000 to 8,000 feet on all exposures.

This soil is deep, has a cobbly heavy loam surface layer, and a very cobbly light clay subsoil (B horizon) and substratum (C horizon).

This soil will hold about 5 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderate to high, permeability is moderately slow and surface

runoff is medium to rapid. The average annual precipitation is 18 to 26 inches.

This soil is suitable for watershed. It is too steep for grazing.

Association 89

This soil is in the loamy-skeletal, mixed, frigid family of Lithic Haploxerolls. It is forming on moderately dissected fault scarps in colluvium derived from volcanic, sandstone and siltstone rocks. Slopes are up to 80 percent at elevations of 6,800 to 8,000 feet on all exposures.

This soil is shallow, has a very stony loam surface layer, and a loose stony colluvium subsoil over bedrock at about 1½ feet.

This soil will hold about 1 inch of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is rapid and surface runoff is rapid. The average annual precipitation is 18 to 25 inches.

This soil is suitable for watershed and limited grazing in the stream bottoms and on the less steep slopes.

Association 90

This soil is in the loamy-skeletal, mixed family of Argic Cryoborolls. It is forming on steep scarp slopes in talus and colluvium derived from latite rocks. Slopes are 40 to 80 percent at elevations of 7,800 to 8,500 feet on mainly northerly exposures.

This soil is moderately deep, has a heavy loam surface layer, and a very cobbly clay loam subsoil (B horizon).

This soil will hold about 3 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is moderate and surface runoff is medium to rapid. The average annual precipitation is 20 to 30 inches.

This soil is suitable for watershed and wildlife habitat.

Association 91

This soil is in the loamy-skeletal, mixed, frigid family of Argixerolls. It is forming on colluvial slopes, rounded ridge tops and swales in material derived from intermediate igneous rocks. Slopes are 20 to 35 percent at elevations of 7,600 to 8,200 feet on all exposures.

This soil is moderately deep, has a stony heavy loam surface layer, and very cobbly clay loam subsoil (B horizon).

This soil will hold about 6 inches of water available to plants in a five-foot profile. The soil is moderately eroded, erosion hazard is moderately high, permeability is moderately slow, and surface runoff is rapid. The average annual precipitation is 22 to 26 inches.

This soil is suitable for watershed, wildlife habitat and limited grazing on the lower slopes.

Association 92

This soil is in the loamy, mixed, frigid, shallow family of Typic Cryorthents. It is forming on low block ridges in material derived from sandstone, mudstone and shale rocks. Slopes are 5 to 30 percent at elevations of 7,800 to 8,200 feet on all exposures.

This soil is very shallow, has a loam surface layer, over bedrock at about 6 inches. (Soil in meadows is about 20 inches deep.)

This soil will hold about 1 to 2 inches of water available to plants. The soil is moderately eroded, erosion hazard is high, permeability is slow and surface runoff is rapid. The average annual precipitation is 22 to 25 inches.

This soil is suitable for grazing, watershed and wildlife.

Association 93

This soil is in the loamy-skeletal, mixed family of Cryochrepts. It is forming on spur ridges and valleys of mountain slopes in material derived from sandstone and limestone rocks. Slopes are up to 50 percent at elevations of 7,800 to 9,000 feet on all exposures.

This soil is moderately deep, has a stony loam surface layer, and a very cobbly silty clay loam subsoil (B horizon).

This soil will hold about 3 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderately high, permeability is moderately slow and surface runoff is medium to rapid. The average annual precipitation is 25 to 30 inches.

This soil is suitable for wildlife habitat, recreation and watershed.

Association 94

This soil is in the loamy-skeletal, mixed family of Cryochrepts. It is forming on mountain slopes in material derived from sandstone and limestone rocks. Slopes are up to 70 percent at elevations of 8,000 to 9,500 feet on all exposures.

This soil is moderately deep, has a silt loam surface layer, and a very cobbly silty clay loam subsoil (B horizon) over bedrock at about 2½ feet.

This soil will hold about 3 inches of water available to plants. The soil is moderately eroded, erosion hazard is high, permeability is moderately slow to slow and surface runoff is rapid. The average annual precipitation is 22 to 30 inches.

This soil is suitable for watershed and recreation.

Association 95

This soil is in the fine, mixed family of Cryochrepts. It is forming on a ridge crest of the Pavant Range in residuum and colluvium derived from sandstone and limestone rocks. Slopes are up to 80 percent at elevations of 8,000 to 9,000 feet on all exposures.

This soil is moderately deep, has a clay loam surface layer, and a cobbly clay subsoil.

This soil will hold about 4 inches of water available to plants. The soil is slightly eroded, erosion hazard is moderately high, permeability is slow and surface runoff is rapid. The average annual precipitation is 25 to 30 inches.

This soil is suitable for watershed and recreation.

Association 96

This soil is in the loamy-skeletal, mixed family of Typic (or Mollic) Cryoboralfs. It is forming on mountain slopes in residuum and colluvium derived from quartzite and shale rocks. Slopes are up to 70 percent at elevations of 8,000 to 9,000 feet on all exposures.

This soil is moderately deep, has a stony heavy loam surface layer, and a very cobbly clay loam subsoil (B horizon).

This soil will hold about 4 inches of water available to plants. The soil is moderately eroded, erosion hazard is moderately high, permeability is slow and surface runoff is rapid. The average annual precipitation is 20 to 30 inches.

This soil is suitable for watershed and recreation.

Association 97

This association consists of 85 percent Typic Torrifuvents and 15 percent Typic Calciorthids. They are forming in material derived from basic and intermediate igneous and limestone rocks. Slopes range from 2 to 15 percent but are dominantly 3 to 7 percent. They occur at elevations ranging from 5,000 to 5,400 feet above sea level with some small areas ranging to 5,700 feet, on an easterly exposure. They are principally long alluvial fans.

The Torrifuvents are deep and moderately deep, gravelly, medium and moderately coarse textured soils.

The Calciorthids are deep, gravelly, medium and moderately coarse textured with a strong lime horizon occurring about 12 to 17 inches.

These soils have a water-holding capacity ranging from 4 to 10 inches in a five-foot profile. The area is slightly eroded. Average annual precipitation is from 7 to 8 inches.

The vegetal cover consists of yellowbrush, winterfat, big sagebrush, rubber rabbitbrush, galleta, threeawn, Indian ricegrass, cheatgrass and globemallow.

The soils in this unit occur in the Desert Loam and Desert Gravelly Loam range sites.

Association 98

This association consists of 30 percent Xerollic Calciorthids, 25 percent Lithic Xeric Torriorthents, 15 percent Xeric Torriorthents, 10 percent Xeric Torrifuvents, and 20 percent Rock outcrops. There are small areas of inclusions of Xerollic Paleorthids and Lithic Argixerolls. They are formed principally from material derived from limestone, acid, and basic igneous rock. Slopes range from 5 to 60 percent but are dominantly 30 to 50 percent. Elevations range from 5,200 to 7,400 feet above sea level, on low mountain slopes. All exposures are included.

The Calciorthids are generally gravelly and cobbly, well drained, and moderately deep, with a strong lime horizon at about 14 to 18 inches. There are some areas relatively free of cobble and gravel which are gritty medium textured soils.

The Lithic Xeric Torriorthents are shallow, well drained, gravelly and very gravelly and cobbly, with medium textured soil material and a water storage capacity of less than 2 inches.

The Xeric Torriorthents consist of colluvial, heterogeneous deposit of soil material and rock fragments primarily accumulated near the base of the slopes.

The Xeric Torrifluvents are gravelly and very gravelly, with medium textured soils, deep and well drained. They are generally stratified and vary in texture.

The moisture-holding capacity of these soils ranges from less than 2 inches to 6 inches for a depth of 5 feet. Erosion is severe and is a constant hazard due to steep slopes. Average annual precipitation ranges from 8 to 10 inches.

The vegetal cover consists of big sagebrush, juniper, cliffrose, Brigham tea, yellowbrush, bluebunch wheatgrass, galleta, Indian ricegrass, squirreltail, native bluegrass and Sandberg bluegrass.

The soils in this association occur in the Semidesert Limy Loam, Semidesert Gravelly Loam and Semidesert Shallow Loam range sites. Rock outcrops does not carry a range site name.

Association 99

This association consists of 75 percent Typic Calciorthids, 17 percent Typic Torrifluvents, 6 percent Typic Torripsamments, and 2 percent Lithic Torriorthents. They are forming on long broad alluvial fans from material derived from igneous and sedimentary rocks. Slopes range from 2 to 15 percent on an easterly facing aspect. Elevations range from 4,600 to 6,600 feet above sea level, primarily on broad alluvial fans and in alluvial coves with an easterly exposure.

The Calciorthids are deep and moderately deep, well drained, medium, moderately coarse and coarse textured with a weakly cemented lime horizon at about 14 to 20 inches. These soils are gravelly at about 16 inches and the texture is moderately fine; however, the weakly cemented horizon is present.

The Torrifluvents are deep and moderately deep, well drained, gravelly, medium to moderately coarse textured and highly stratified throughout. These areas are generally quite narrow.

The Torripsamments consist of areas of blow sand (dunes) particularly in the area of Sand Wash toward Snake Pass.

The Lithic Torriorthents are shallow, well drained, gravelly and cobbly, with medium textured soil.

The moisture-holding capacity ranges from less than 2 inches for the Calciorthids and Lithic Torriorthents to 6 or 7 for the Torrifluvents

for a depth of five feet. These soils are slightly to severely eroded. Average annual precipitation is 6 to 8 inches.

Vegetal cover is shadscale, winterfat, bud sagebrush, galleta, Indian ricegrass, cheatgrass and halogeton with small percentages of black sage, kochia, horsebrush, rubber rabbitbrush, Brigham tea, globemallow, and squirreltail.

The soils in this association occur in the Desert Loam, Desert Gravelly Loam, Desert Sand and Desert Shallow Loam range sites.

Association 100

This association consists of 40 percent Xerollic Calciorthids, 20 percent Xerollic Haplargids, 20 percent Xeric Torrifuvents, 15 percent Lithic Xerollic Camborthids and 5 percent Rock outcrops. They are forming in material derived from acid, basic and intermediate igneous and sedimentary rock. Slopes range from 3 to 50 percent. Elevations range from 5,400 to 7,400 feet above sea level but are dominantly 5,440 to 6,800 feet, on rolling hills and mountain slopes.

The Calciorthids are deep, well drained, gravelly, medium and moderately coarse textured, with a strong lime horizon occurring at 18 to 24 inches; at some locations there are lime cemented hardpans that occur at depths of 10 to 15 inches.

The Haplargids are deep, well drained, medium textured and gravelly medium textured soils with a textural B horizon between 10 and 20 inches. These soils are predominantly on a north and northeast aspect.

The Torrifuvents are chiefly in small valleys and a few isolated small fans. They are deep and moderately deep, well drained and highly stratified.

The Lithic Camborthids are shallow, well drained, gravelly and cobbly with a B horizon at about 8 to 14 inches. They are generally on west and south aspects.

The water-holding capacity of these soils ranges from less than 2 to 7.5 inches for a depth of five feet. They have a moderate erosion hazard. The average annual precipitation is 8 to 12 inches.

Vegetal cover is big sagebrush, juniper, yellowbrush, blackbrush, black sagebrush, range ratany, Brigham tea, Indian ricegrass, squirreltail, galleta, needleandthread, Russian thistle, sand dropseed, and penstemon.

The soils in this association occur in Semidesert Loam, Semidesert Gravelly Loam and Semidesert Shallow Loam range sites. There is no range site for Rock outcrops.

Association 101

This association consists of 88 percent Typic Torrifuvents and 12 percent Typic Calciorthids. Parent material consists of material from sedimentary and basic and intermediate igneous rocks. Slopes range from 0 to 3 percent on long, broad alluvial fans with primarily a westerly exposure. Elevations range from 4,950 to 5,200 feet above sea level.

The Torrifuvents are deep and range from medium and moderately fine textured to gravelly medium textured soils. The gravelly soils are on the east side and gradually decreasing in gravel content toward the medium and moderately fine soils on the west end of the association.

The Calciorthids are gravelly and cobbly, medium and moderately coarse textured, primarily on the east and southeast portion. In a few isolated spots they have a lime cemented hardpan above 24 inches.

The available water-holding capacity is from 5.5 inches in the gravelly soils to 11 inches in the medium and moderately fine soils for a depth of five feet. They are slightly eroded. The average annual precipitation is 6 to 8 inches.

These soils are used for cultivated farm land and the vegetation consists primarily of alfalfa and small grains. Capability units are IIc2, IIe2, IIe24, IIIe2.

Association 102

This mapping unit consists of Aquents forming in mixed alluvium from igneous and sedimentary rocks on the Beaver River flood plain. The slopes are dominantly 0 to 1 percent but range up to 4 percent in undulating areas. Elevation ranges from 4,850 to 4,970 feet above sea level.

The soils are deep, somewhat poorly and poorly drained, black, medium and moderately fine textured, and moderately to strongly saline-alkali. In some places the substratum is white and very high in lime.

The soil holds 9 to 11 inches of available water for a depth of five feet. The area has slight water and moderate wind erosion hazard. The average annual precipitation is 6 to 8 inches.

The vegetation is dominantly greasewood, rubber rabbitbrush, shadscale, alkali sacaton, squirreltail, saltgrass, Russian thistle, and halogeton.

Range sites are Alkali Flats and Alkali Bottoms.

Association 193

This association consists of *Typic Torrifluvents* forming in alluvium derived from mixed igneous and sedimentary rocks. They are forming on alluvial fans. Slopes are 1 to 4 percent, dominantly 1 to 2 percent. Elevations range from 5,120 to 5,320 feet above sea level. The aspect is west and northwest.

The soils are deep, well drained, calcareous, medium and moderately coarse and gravelly medium and moderately coarse textured.

Water-holding capacity for these soils ranges from 4 to 5 inches in a five-foot profile. The erosion hazard is slight. The average annual precipitation ranges from 7 to 11 inches.

The area is irrigated cropped wool and cattle at Hesperville. Capability units are 11a2, 11a2/4, 11a2, 11a2/4.

Association 194

This association consists of 40 percent *Litic Torrifluvents*, 30 percent *Typic Calcixorthids*, 10 percent *Typic Torrifluvents* and 20 percent *Rock outcrops*. These soils are forming in material from limestone and basic and intermediate igneous rocks. Slopes range from 10 to 40 percent with 10 to 40 percent predominating. Elevations range from 5,400 to 5,500 feet above sea level on all exposures. They occur on mountain slopes.

The *Litic Torrifluvents* are shallow, well drained, gravelly and coarsely and because of steep slopes are unsuitable to erosion. They have a water-holding capacity of less than 2 inches.

The *Calcixorthids* are moderately deep, gravelly, medium and moderately coarse textured and occur primarily on the west and northwest slopes. Erosion hazard is severe and water-holding capacity is 3 to 4 inches in a five-foot profile.

The *Torrifluvents* are a very minor percentage in this association but generally are deep, well drained gravelly, medium and moderately coarse textured with a water-holding capacity of 3 to 4 inches.

The average precipitation is 8 to 9 inches.

The vegetation consists of shrubland, black sagebrush, *Brigham tea*, *Yucca* and *amargos*.

The soils in this association occur in bands gravelly loam and coarse loam from ridge sites.

Association 105

This association consists of 50 percent Typic Calciorthids and 50 percent Typic Torrifuvents. They are forming in material from limestone and basic and intermediate igneous rock. Slopes range from 5 to 20 percent on all exposures. Elevations range from 5,000 to 6,200 feet above sea level on broad alluvial fans and low rolling hills.

The Calciorthids are deep, well drained, stony, cobbly and gravelly, medium and moderately coarse textured soil with a strong lime (calcic) horizon at 14 to 19 inches. These soils have gullies ranging in depth from 1 to 10 feet but dominantly 2 to 4 feet in depth and 100 to 500 feet apart, dominantly 400 to 500 feet apart.

The Torrifuvents are deep, well drained calcareous, gravelly and cobbly with medium and moderately coarse soils. These soils are on long, broad alluvial fans with many frequent, moderately deep gullies, 50 to 300 feet apart.

The water-holding capacity of these soils is 4 to 5 inches in the Torrifuvents and 3 to 6 inches in the Calciorthids for a depth of five feet. The average annual precipitation is 6 to 8 inches.

Vegetal cover is yellowbrush, Brigham tea, horsebrush, range ratany, big sagebrush, winterfat, fourwing saltbush, cactus, galleta, Indian ricegrass and threeawn.

The soils in this association occur in the Desert Gravelly Loam and the Desert Stony Loam range sites.

Association 106

This association consists of Lake Playas. The areas mapped are the Sevier Lake Bed, Wah Wah Hardpan, Quichapa Lake, Little Salt Lake and Rush Lake. These areas are barren, flat, undrained basins which are generally dry; however, they contain water of a very shallow depth at certain periods during the year. Soil textures vary from a sandy loam to a heavy clay loam; the salt content is high.

Association 107

This association consists of about 70 percent Typic Torrifuvents, 20 percent Typic Calciorthids and 10 percent Typic Torripsamments. They are forming in alluvium from sedimentary and igneous rocks. Slopes range from 3 to 15 percent on north, south and east exposures; however, east dominates. Elevations range from 4,600 to 6,000 feet above sea level on long alluvial fans, valleys and low undulating hills.

The Torrifluvents are deep, well drained, moderately coarse and coarse textured, with small areas having a medium textured surface. These are principally run-in areas and very minor in size. These soils are calcareous.

The Calciorthiss are deep, well drained, moderately coarse and coarse textured gravelly and cobbly soils with a strong lime horizon occurring between 14 and 18 inches.

The Torripsamments consist of small areas of blow sand composed primarily of dunes.

The moisture-holding capacity of these soils varies from 3.5 inches to 9 inches for a depth of five feet. The average annual precipitation is 6 to 8 inches.

The vegetal cover consists of large stands of horsebrush, with yellowbrush, Brigham tea, shadscale, black sagebrush, winterfat, fourwing saltbush, woody phlox, range ratany, rubber rabbitbrush, globemallow, heptodactylon, halogeton, mustard, Russian thistle, squirreltail, Indian ricegrass, and galleta.

The soils in this association occur in the Desert Loam, Desert Gravelly Loam and Desert Sand range sites.

Association 108

This association consists of 85 percent diatomaceous earth and 15 percent Typic Torrifluvents. They are formed from deposits of the siliceous remains of primitive plants called diatoms and alluvium derived from sedimentary and igneous rocks. Slopes range from 1 to 5 percent and elevations range from 4,500 to 4,700 feet above sea level.

The Diatomaceous earth is deep, well drained, calcareous, platy and is usually of a silt loam texture on the surface. About half the area has a layer of pea-sized gravel underlying the diatomaceous earth at an average depth of 36 inches. Calcium carbonate content of this soil averages from 40 to 50 percent.

The Torrifluvents are deep, well drained, calcareous, medium and moderately coarse textured, underlain by a medium textured diatomaceous earth. This alluvium averages in depth from 6 to approximately 30 inches and in all cases is underlain by the diatomaceous earth material.

The moisture-holding capacity of these soils ranges from 3 to 7 inches for a depth of five feet. The erosion hazard is moderate. Average annual precipitation ranges from 6 to 8 inches.

Vegetation is predominantly shadscale and horsebrush with small percentages of Brigham tea, yellowbrush, fourwing saltbush, bud

sagebrush, winterfat, black sagebrush, globemallow, halogeton, galleta, Indian ricegrass and squirreltail.

The soils in this association occur in the Desert Limy Loam and Desert Loam range sites.

Association 109

This association consists of very shallow soils over bedrock and Rock outcrops. The slopes are very steep, water-holding capacity is very low, the runoff is rapid and very rapid. This land has no agricultural value. It is capability class VIII and is not placed in a range site.

Association 110

This association consists of 70 percent Typic Natrargids and 30 percent Typic Torripsamments. They are developing in material from sedimentary and igneous rock and lake laid sediments. Slopes range from 0 to 5 percent with 1 to 3 percent being most common. Elevations range from 5,050 to 5,100 feet above sea level.

The Natrargids are deep, moderately well drained, medium and moderately fine textured soils, with textural B horizons averaging from 4 to 14 inches thick. The pH in this soil generally runs from 8.6 to 9.4.

The Torripsamments consist of dunes and blow sand that averages 1 to 10 feet thick. This area is all underlain by Natrargids like the one described above.

The moisture-holding capacity of this soil ranges from 3.5 to 11 inches for a depth of five feet. The erosion is slight with the greatest hazard in the Torripsamments being from wind. The average annual precipitation ranges from 6 to 8 inches.

The vegetation is shadscale, greasewood, halogeton, big sagebrush, winterfat, yellowbrush, alkali sacaton, and galleta, with the big sagebrush, yellowbrush, galleta and some bud sagebrush occurring primarily in the sandy areas.

The soils in this association occur in the Desert Alkali Flat and the Desert Sand range sites.

Association 111

This association consists of about 60 percent Haploxerolls, 35 percent Calcixerolls and about 5 inclusions of Argixerolls, Calciorthis and Xeropsamments. They are formed principally in material from mixed igneous rocks. Slopes are dominantly 1 to 10 percent, but range to 20 percent. Elevations are dominantly 5,800 to 6,800 feet, but range to 5,000 feet in Tinic Valley. These soils occur on rolling hills, alluvial fans, ridges, and mountain slopes, on all exposures.

The Haploxerolls are well drained. They are principally moderately coarse textured, but range to moderately fine. They are commonly gravelly below 3 to 4 feet.

The Calcixerolls are well drained. They are principally moderately coarse textured, but range to medium. Strong lime horizons occur at about 10 to 15 inches. About 2/3 of the Calcixerolls are gravelly or cobbly throughout the profile.

The water-holding capacity of the gravelly or cobbly soils is about 5 to 8 inches for a depth of five feet. The nongravelly soils will hold about 8 to 10 inches. Erosion is usually moderate. The average annual precipitation is 12 to 14 inches.

The vegetal cover is juniper, pinyon, big sagebrush, bluebunch wheatgrass, Indian ricegrass, annual weeds and grasses. Some areas have been seeded to crested wheatgrass, and a few small areas are used for dry and irrigated cropland.

The soils in this association occur in Upland Stony Loam (juniper-pinyon), Upland Limy Loam, Upland Loam, Upland Loam (juniper-pinyon) and Upland Gravelly Loam range sites.

Association 112

This association consists almost entirely of Argixerolls with a few small areas of Calcixerolls and Xeropsamments. These soils are formed in material from intermediate and basic igneous rocks. Slopes are dominantly 3 to 30 percent, but range to 50 percent. Elevation ranges from 6,400 to 7,000 feet. These soils occur on rolling hills, alluvial fans, mountain slopes and ridges.

They are deep and well drained. The surface is medium textured; about half is cobbly. The B₂t horizons are moderately fine and fine, the G horizons are moderately coarse to moderately fine textured. About 40 percent of the soils are gravelly or cobbly. Strong lime horizons occur at about 24 to 40 inches.

The water-holding capacity is about 6 to 11 inches for a depth of five feet. Erosion is slight to moderate. The average annual precipitation is 14 to 17 inches.

The vegetal cover is big sagebrush, Gambel oak, bitterbrush, lupine, bluebunch wheatgrass, Sandberg bluegrass and occasionally pinyon pine and juniper.

These soils are in an Upland Loam range site.

Association 113

This association consists of about 70 percent Petrocalcic Paleixerolls and about 30 percent associated basalt rock outcrops and boulders. The soils are formed in material from basalt parent rock. Slopes are dominantly 3 to 15 percent, but range to 30 percent. Elevation ranges from 6,200 to 7,400 feet. These soils occur on rolling to steep basalt planes and rolling hills.

They are well drained, shallow to moderately deep (12 to 40 inches) over an indurated lime hardpan. They have a medium textured surface soil and a moderately fine to fine textured B2t horizon that overlies the hardpan; cobbles, stones or boulders are on the surface in most places.

The water-holding capacity ranges from about 2.0 to 6.0 inches to the hardpan. Erosion is slight. The average annual precipitation is 12 to 18 inches.

The vegetal cover is juniper, Gambel oak, big sagebrush, serviceberry, little needlegrass, slender wheatgrass and mountain junegrass.

These soils are in Upland Shallow Hardpan (juniper-pinyon) and a Mountain Loam range site.

Association 114

This association consists of about 90 percent Typic Argixerolls and 10 percent Lithic Argixerolls. The soils are formed in material from intermediate igneous rock. Slopes are dominantly from 1 to 25 percent but range to 50 percent. Elevation ranges from 6,500 to 8,000 feet. The soils occur on rolling hills, alluvial fans, ridges and in small mountain valleys.

The Typic Argixerolls are deep, and well drained. About half of the soils have a medium textured surface and a moderately fine or fine textured B2t horizon. The other half are similar except they are gravelly or cobbly throughout. These soils are noncalcareous to below 40 inches.

The Lithic Argixerolls are shallow. They have a cobbly or very cobbly medium textured surface soil, a very cobbly B2t horizon, underlain by bedrock at less than 20 inches.

The water-holding capacity ranges from about 6 to 11 inches for a depth of five feet for the deep soils, and the shallow soils 1 to 2 inches to bedrock. Erosion is slight to moderate. The average annual precipitation is 16 to 20 inches.

The vegetal cover is Gambel oak, big sagebrush, bitterbrush, snowberry, tall native bluegrass, bluebunch wheatgrass, lupine, mountainmahogany and annual weeds.

These soils are in Mountain Loam and Mountain Shallow Loam range sites.

Association 115

This association consists of about 35 percent Rock outcrops and Rock land, 30 percent Lithic Argixerolls, 20 percent Haploxerolls, 10 percent Haploxeralfs and 5 percent inclusions of Petrocalcic Pale-xerolls. These soils are formed in material from acid and intermediate igneous rocks. Slopes range from 2 to 60 percent. Elevation ranges primarily from 6,800 to 8,000 feet; however, some rocky peaks extend to over 9,000 feet. The soils occur on rough mountain slopes, ridges and rolling hills.

The Rock outcrops and Rock land consist of bedrock or very shallow soils over bedrock.

The Lithic Argixerolls are shallow. They have a moderately coarse or medium textured surface. Some soils are cobbly. The B2t horizons are gravelly or very cobbly medium or moderately fine textured underlain by bedrock at less than 20 inches.

The Haploxerolls are deep and well drained. They have a moderately coarse textured surface, and a finely gravelly medium and moderately coarse textured subsoil and substratum.

The Haploxeralfs have a very cobbly medium textured surface, a cobbly moderately fine B2t horizon and medium to moderately fine textured C horizons. Strong lime horizons occur at about 30 to 36 inches below the surface.

The water-holding capacity is about 1 to 2 inches above the bedrock for the shallow soils and 5 to 8 inches for the deep soils to the depth of five feet. Erosion is slight to severe. The average annual precipitation is about 16 to 24 inches.

The vegetal cover is mountainmahogany, Gambel oak, big sagebrush, bitterbrush, snowberry, tall native bluegrass and bluebunch wheatgrass.

These soils are in Mountain Shallow Loam, Mountain Gravelly Loam and Upland Stony Loam (juniper-pinyon) range sites.

Association 116

This association consists of Haplaquolls, Haplaquepts and Calciaquolls in about equal percentages. The soils are formed in the valley bottoms from mixed igneous and sedimentary rocks. Elevation ranges from 5,400 to 6,000 feet.

The soils are deep and poorly and somewhat poorly drained. They are dominantly medium and moderately fine textured. The Calciaquolls have strong lime horizons that occur from near the surface to about 20 inches.

The water-holding capacity ranges from about 9 to 11 inches for a depth of five feet. The water table varies from near the surface to about 40 inches. Some are moderately saline. The average annual precipitation is 10 to 11 inches.

The vegetal cover is primarily meadow grasses, clovers, and sedges.

This soil is in capability class and subclass IIw, IIIw, and Vw.

Association 117

This association consists of 75 percent Xerollic Haplargids, 15 percent Xerollic Calciorthids and 10 percent Xeric Torrifluvents. They are developing on alluvial fans in mixed alluvium derived from acid and basic igneous rocks. The slopes range from 2 to 8 percent, but are dominantly 3 to 6 percent on a westerly exposure. Elevations range from 5,400 to 5,760 feet above sea level.

The Haplargids are deep and well drained, with medium or moderately coarse textured surface, medium to moderately fine B2t horizons and medium moderately fine and moderately coarse textured C horizons. Strong lime horizons occur between 15 and 30 inches below the surface.

The Calciorthids are deep, well drained, calcareous, gravelly and cobbly with moderately coarse to medium textured soils or they are medium or moderately fine textured without gravel, with a strong lime horizon occurring between 14 and 18 inches. Near the west side of the Mineral Mountains stones occur in the soil profile.

The Torrifluvents are deep well drained, calcareous, gravelly to nongravelly medium and moderately coarse textured, usually with a small gully in the bottom of them.

The soils hold between 3.5 and 9 inches of available water for a depth of five feet. The area is slightly eroded. The average annual precipitation is estimated to be 8 to 12 inches.

The vegetation is dominantly big sagebrush, yellowbrush, galleta, squirreltail, cheatgrass, Indian ricegrass, loco and sandbur.

Range sites are Semidesert Loam, Semidesert Gravelly Loam, and Semidesert Limy Loam.

Association 118

This association consists of 35 percent Xerollic Paleorthids, 30 percent Xerollic Calciorthids, 15 percent Xerollic Haplargids, 10 percent Xerollic Paleargids and 10 percent Xeric Torrifluvents. They are developing on alluvial fans and low rolling hills in mixed alluvium and residuum derived from igneous parent material. The slopes range from 2 to 30 percent, but dominantly are 3 to 15 percent on all exposures. Elevation ranges from 5,600 to 7,000 feet above sea level.

The Paleorthids are shallow, well drained, calcareous, medium and moderately fine textured with small areas having gravel and cobbles in the profile. A lime cemented hardpan occurs between 12 and 20 inches which inhibits the downward penetration of moisture and root growth.

The Calciorthids are deep, well drained, moderately fine and gravelly medium and moderately fine textured with a strong lime horizon occurring between 16 and 22 inches.

The Haplargids are deep, and well drained, with a gravelly medium textured surface soil, a moderately fine gravelly or nongravelly B2t horizon, gravelly and nongravelly medium and moderately fine textured C horizons, and the strong lime horizon between 12 and 18 inches below the surface.

The Paleargids are moderately deep well drained soils with gravelly and nongravelly medium textured surface soils; the B2t horizons are gravelly or nongravelly moderately fine textured; the C horizons are gravelly or nongravelly medium textured. Strong lime horizons occur between 8 and 12 inches and a lime cemented hardpan occurs between 25 and 30 inches below the surface.

The Torrifluvents are deep, well drained, moderately fine and gravelly and cobbly medium and moderately coarse textured soils that are noncalcareous in some places and calcareous in other places. These soils are in the alluvial valleys.

Water-holding capacity ranges from 2 to 5 inches in the hardpan soils and 8 to 12 inches in the deep soils for a depth of 5 feet. There is slight and moderate erosion. The average annual precipitation is about 10 to 14 inches.

The vegetation is dominantly big sagebrush, bitterbrush, yellowbrush, Brigham tea, juniper, squirreltail, tall native bluegrass, galleta, false yarrow, beggartick and mustard. Much of the area has been seeded to crested wheat.

Range sites are Semidesert Shallow Hardpan, Semidesert Loam, Semidesert Limy Loam, and Semidesert Gravelly Loam.

Association 119

This association consists of 40 percent Typic Haplargids, 35 percent Typic Torrifuvents, and 25 percent Typic Calciorthids. They are developing on alluvial fans and flood plains in mixed alluvium derived from igneous and sedimentary rocks. The slopes range from 0 to 5 percent but are dominantly 1 to 3 percent. Elevation ranges from 5,040 to 5,440 feet above sea level.

The Haplargids are deep, well drained, with a moderately coarse textured surface soil, a moderately fine to moderately coarse or gravelly moderately fine to medium textured B2t horizon and medium textured C horizon, with a strong lime horizon occurring between 10 and 16 inches below the surface.

The Torrifuvents are deep, well drained, slightly calcareous, usually medium and moderately fine textured from the surface to 20 inches and gravelly moderately fine and medium textured below 20 inches.

The Calciorthids are deep, well drained, calcareous, medium and moderately coarse textured. In places cobbles and very gravelly materials occur below 30 inches. Also in a few places a lime cemented hardpan occurs between 25 and 30 inches.

Water-holding capacity ranges from about 3 to 10 inches for a depth of 5 feet. There is slight to moderate erosion. The average annual precipitation is 5 to 8 inches.

The vegetation consists mainly of fourwing saltbush, yellowbrush, range ratany, Brigham tea, shadscale, cholla cactus, galleta, Indian ricegrass, halogeton and Russian thistle.

Range sites are Desert Gravelly Loam and Desert Limy Loam.

Association 120

This association consists of 25 percent Aridic Argixerolls, 15 percent Typic Argixerolls, and Abruptic Palexerolls, 20 percent Calcixerolls, 10 percent Lithic Argixerolls, 10 percent Lithic Haploxerolls, 5 percent Haploxerolls and 15 percent Rock outcrops. They are developing on mountain slopes in residuum and colluvium derived from igneous and sedimentary rock. The slopes range from 10 to 70 percent but are dominantly 20 to 50 percent on all exposures. Elevations are dominantly 5,800 to 7,630 feet above sea level, but range to 5,000 feet in Juab County.

The Aridic Argixerolls are deep and moderately deep, well drained, and have gravelly or nongravelly medium textured surface soils, gravelly or nongravelly moderately fine textured B2t horizons, gravelly, very gravelly and cobbly moderately coarse to moderately fine textured C horizons, with the strong lime horizon occurring between 13 and 22 inches below the surface. About one-third of these soils have bedrock occurring between 20 and 36 inches.

The Typic Argixerolls are deep, well drained, have cobbly or noncobbly medium textured surface soils, gravelly or nongravelly moderately fine and fine textured B2t horizons, gravelly and nongravelly medium and moderately fine textured C horizons, with the strong lime horizon between 30 and 40 inches below the surface; in places no carbonates are present.

Palexerolls are similar to Argixerolls except they are in an abrupt texture change from a loam surface to a clay subsoil (B2t). The Argixerolls generally occur on the north, east and northwest exposures.

The Calcixerolls are deep and moderately deep, well drained, calcareous, gravelly or cobbly, moderately coarse to moderately fine textured with some stones in the profile below 30 inches, and the strong lime horizon occurring between 10 and 15 inches. About one-fourth of the Calcixerolls have bedrock between 20 and 36 inches. Also in some small areas there is a lime cemented hardpan about 17 inches below the surface.

The Lithic Argixerolls are shallow, well drained, have gravelly and cobbly medium textured surfaces, gravelly, cobbly and stony moderately fine textured B2t horizons and bedrock between 10 and 20 inches.

The Lithic Haploxerolls are very shallow and shallow, well drained, cobbly and stony medium textured, with bedrock between 5 and 15 inches.

The Haploxerolls are deep well drained, gravelly and nongravelly medium and moderately fine textured, and noncalcareous to moderately calcareous.

The shallow and very shallow soils hold about 0.5 to 2.5 inches of available water and the deep and moderately deep soils hold about 4 to 11 inches of water to a depth of 5 feet. There is slight and moderate erosion. The average annual precipitation ranges from 12 to 20 inches.

The vegetation is mainly juniper, pinyon pine, big sagebrush, bitterbrush, oakbrush, Brigham tea, rubber rabbitbrush, tall native bluegrass, squirreltail, spiked wheatgrass, bluebunch wheatgrass, cheatgrass, mountain junegrass, Indian ricegrass, penstemon, false yarrow, daisy and pricklypear.

The following range sites are in this association: Upland Stony Loam (J.P.), Upland Loam, Upland Gravelly Loam, Upland Loam (J.P.), Upland Stony Hills (J.P.) and Hardpan, Mountain Stony Loam and Mountain Shallow Loam.

Association 121

This association consists of 40 percent Aridic Argixerolls, 30 percent Typic Argixerolls, 20 percent Calcixerolls, 5 percent Haploxerolls and 5 percent Rock outcrops. They are developing on rolling hills of relatively high mountains southeast of Minersville in residuum and colluvium from igneous rocks. Slopes range from 3 to 45 percent, but are dominantly 7 to 20 percent on all exposures, and elevation ranges from about 6,000 to 8,420 feet above sea level.

The Aridic Argixerolls are deep, well drained, with a medium texture surface with stones and cobbles scattered on the surface, gravelly and cobbly moderately fine textured B2t horizons, cobbly medium and moderately fine textured C horizons, with the strong lime horizon occurring between 10 and 30 inches.

The Typic Argixerolls are deep and moderately deep, well drained and noncalcareous throughout. They have a medium textured surface soil and moderately fine and fine B2t and C horizons that are cobbly at some locations. Approximately 50 percent of the surface is covered with cobble and stones.

The Calcixerolls are deep, well drained, calcareous, nongravelly and gravelly medium, moderately fine and moderately coarse textured with a strong lime horizon between 16 and 25 inches below the surface, dominantly between 16 and 18 inches.

The Haploxerolls are on small alluvial fans and in narrow alluvial valleys. They are deep, well drained, slightly calcareous below 40 inches, and medium and moderately fine textured.

Water-holding capacity ranges from 5 to 11 inches for a depth of five feet. The erosion is slight to moderate. This area has been successfully reseeded to crested wheatgrass. The average annual precipitation is about 12 to 16 inches.

The vegetal cover is big sagebrush, bitterbrush, juniper, Brigham tea, bluebunch wheatgrass, squirreltail, Indian ricegrass, blue grama grass, tall native bluegrass, mountain junegrass, cheatgrass, needle-andthread and peavine.

Range sites are Upland Gravelly Loam, Upland Loam, Upland Stony Loam and Upland Limy Loam.

Association 122

This association consists of 15 percent Lithic Haploxerolls, 15 percent Lithic Argixerolls, 25 percent Rock outcrops, 15 percent Argixerolls, 15 percent Calcixerolls, 10 percent Haplargids and 5 percent Torrifuvents. They are forming on mountain slopes in residuum and colluvium derived from igneous and sedimentary rock. The slopes range from 5 to 70 percent, but are dominantly 10 to 45 percent. Elevation is dominantly from 5,800 to 9,000 feet; a few rocky peaks extend to 9,600 feet.

The Lithic Haploxerolls are very shallow and shallow, well drained, gravelly and cobbly gritty medium or moderately coarse textured with bedrock between 4 and 15 inches below the surface.

The Lithic Argixerolls are shallow, well drained, with a gravelly and cobbly medium textured surface soil, a gravelly and cobbly moderately fine textured B2t horizon, and bedrock between 5 and 20 inches below the surface.

The Argixerolls are deep and moderately deep, well drained, nongravelly and gravelly moderately coarse and medium texture on the surface, gravelly, cobbly and stony moderately fine textured B2t horizons, gravelly, cobbly and stony medium and moderately fine textured C horizons, with the strong lime horizon forming between 8 and 23 inches below the surface.

The Calcixerolls are deep and moderately deep, well drained, very gravelly, gravelly, cobbly and stony medium and moderately coarse textured with the strong lime horizon occurring between 8 and 17 inches. Small areas of this soil have a lime cemented hardpan occurring between 18 and 21 inches.

The Haplargids occur on the lower mountain slopes, generally on south and west facing slopes and are severely eroded. They are deep and well drained, with a gravelly medium textured surface, gravelly medium to moderately fine textured B2t horizons, and weak carbonate accumulation on top of the bedrock which occurs between 27 and 36 inches below the surface. Some cobbles and stones occur in the profile in certain areas.

The Torrifuvents occur in narrow valleys. They are deep and moderately deep, well drained, gravelly and cobbly medium and moderately coarse textured.

The shallow and very shallow soils will hold about 0.5 to 2.5 inches of moisture and the deep and moderately deep soils will hold approximately 3 to 10 inches of moisture in a five-foot profile. Three-fourths of the area is severely eroded and the rest is moderately to slightly eroded. The average annual precipitation ranges from about 12 to 20 inches.

The vegetal cover is mainly juniper, pinyon pine, big sagebrush, bitterbrush, snakeweed, Brigham tea, birchleaf mountainmahogany, curl-leaf mountainmahogany, bluebunch wheatgrass, squirreltail, Indian ricegrass, threeawn, western wheatgrass, tall native bluegrass, cheatgrass, peavine, and pricklypear. At the higher elevations Ponderosa pine, foxtail pine, white fir, and Douglasfir occur.

Range sites are Upland Stony Hills (J.P.), Upland Shallow Loam, Upland Shallow Stony Loam, Upland Loam, Upland Gravelly Loam, Upland Loam (J.P.), Upland Gravelly Loam (J.P.), Upland Shallow Hardpan and Upland Stony Loam.

Association 123

This association consists of 20 percent Argixerolls, 20 percent Palexerolls, 15 percent Lithic Haploxerolls, 15 percent Lithic Argixerolls, 15 percent Rock outcrops, 10 percent Durixerolls and 5 percent Haploxerolls. They are developing on mountain slopes, terraces and rolling hills in residuum and colluvium from sedimentary and igneous rocks. The slopes range from 2 to 50 percent, but are dominantly 15 to 40 percent on all exposures. Elevations range from 6,000 to 7,180 feet above sea level.

The Argixerolls are deep and moderately deep, well drained, with gravelly and cobbly medium textured surface soils, gravelly moderately fine B2t horizons, gravelly and/or cobbly medium and moderately fine textured C horizons, with strong lime horizon between 10 and 18 inches below the surface. Sixty percent of the soil is moderately deep with bedrock between 20 and 36 inches. Near the bottom of the mountain slopes are small areas of light colored soils on south and west exposures where the erosion is more severe and has eroded the surface away.

The Palexerolls have lime cemented hardpans, are shallow, moderately deep and well drained with a gravelly medium textured surface soil, nongravelly or gravelly and cobbly moderately fine textured B2t horizons, and gravelly and cobbly medium and moderately fine textured Cca horizons, with a strong lime horizon occurring at 15 to 25 inches. The lime cemented hardpan occurs between 18 and 26 inches below the surface.

The Lithic Haploxerolls are shallow and very shallow, well drained, gravelly or cobbly medium and moderately fine textured soils over bedrock between 4 and 20 inches.

The Lithic Argixerolls are shallow and well drained with a gravelly or cobbly medium textured surface soil, gravelly and cobbly moderately fine and fine textured B2t horizons over bedrock which occurs between 10 and 20 inches.

The Durixerolls are shallow and moderately deep, well drained soils over a silica cemented hardpan. The surface soils range from sandy loam to clay loam, some are gravelly. The B2t horizons range from moderately fine to fine. The hardpan occurs at depths of 12 to 30 inches.

The Haploxerolls are deep and moderately deep, well drained, gravelly and cobbly medium or moderately coarse textured.

The shallow and very shallow soils hold about 0.3 to 2.0 inches of available water while the deep and moderately deep soils will hold about 3 to 9 inches of available water for a depth of 5 feet. The erosion is moderate and severe, with the severe erosion pattern occurring on the shallow and very shallow soils. The average annual precipitation is about 10 to 16 inches.

The vegetation is dominantly juniper, pinyon pine, big sagebrush, bitterbrush, Brigham tea, yellowbrush, tall native bluegrass, Indian ricegrass, bluebunch wheatgrass, squirreltail, needleandthread, woody phlox and desert honeysuckle.

The range sites are Upland Gravelly Loam, Upland Shallow Loam, Upland Shallow Hardpan, Upland Stony Loam, Upland Gravelly Loam (J.P.), and Upland Stony Loam (J.P.).

Association 124

This association consists of 50 percent Xerollic Calciorthids, 30 percent Xerollic Haplargids and 20 percent Xerollic Paleorthids. They are forming on alluvial fans in mixed alluvium derived from intermediate and basic igneous rocks. The slopes range from 2 to 10 percent, but are dominantly 4 to 8 percent on all exposures. Elevation ranges from 5,100 to 5,800 feet above sea level.

Calciorthids are deep, well drained, calcareous, moderately coarse and medium textured with gravelly moderately coarse textured layers occurring below 36 inches in much of the area. Strong lime horizons usually occur between 20 and 36 inches.

The Haplargids are deep and well drained, with a moderately coarse or medium textured surface, a medium or moderately fine textured B2t horizon, and nongravelly and gravelly medium and moderately coarse textured C horizons with the strong lime horizon occurring between 27 and 32 inches below the surface.

The Paleorthids have a hardpan and are shallow, well drained, calcareous, gravelly medium textured with the lime cemented hardpan occurring between 10 and 15 inches below the surface. Some stones and cobbles are scattered around on the surface in some areas.

Water-holding capacity of these soils is about 1 to 2 inches in the shallow soils and 5 to 10 inches in the deep soils for a depth of five feet. The average annual precipitation is estimated to be 10 to 12 inches.

The vegetal cover consists of mainly big sagebrush, yellowbrush, black sagebrush, galleta, squirreltail, Sandberg bluegrass, Indian ricegrass, cheatgrass, threeawn, cholla cactus and wolfberry.

The range sites consist of Semidesert Loam, Semidesert Limy Loam and Semidesert Shallow Hardpan.

Association 125

This association consists of 80 percent Typic Torrifluvents and 20 percent Typic Torriorthents. They are forming on alluvial bottom fans in mixed alluvium derived from igneous and sedimentary rocks. The area is undulating or rolling with slopes ranging from 0 to 7 percent, but dominantly 2 to 5 percent. Elevation is 5,100 to 5,400 feet above sea level.

The Torrifluvents are a deep, well drained, calcareous, stratified soil with moderately coarse to moderately fine textures in the profile. In some places as much as 16 inches of blow sand has accumulated over the original soil; in other places gravelly sandy loam occurs below 30 inches.

The Torriorthents are deep well drained, calcareous, medium and moderately fine textured and moderately to strongly affected by alkali. The Torrifluvents are on the top and sides of the slopes, while the Torriorthents occupy the depression areas.

These soils will hold approximately 4 to 10 inches of available water for a depth of five feet. There is slight and moderate wind and water erosion. The average annual precipitation is about 5 to 8 inches.

In the Torrifluvents the vegetation in certain areas is predominantly big sagebrush; in other areas it is yellowbrush. Other vegetation on these soils is winterfat, rubber rabbitbrush, pricklypear, galleta, Indian ricegrass, squirreltail, alkali sacaton, halogeton and Russian thistle. The vegetation on the Torriorthents is predominantly shadscale, bud sagebrush, winterfat and squirreltail.

Range sites are Desert Loam and Desert Flats.

Association 126

This association consists of 40 percent Typic Calciorthids, 15 percent Typic Paleorthids, 20 percent Typic Torrifuvents, 10 percent Lithic Torriorthents and 5 percent Rock outcrops. They are developing in residuum and alluvium from sedimentary and intermediate and basic igneous rocks on low rolling hills. The slopes range from 3 to 30 percent, but are dominantly 3 to 20 percent. Elevation is 5,230 to 5,800 feet above sea level.

The Calciorthids are deep and moderately deep, well drained, calcareous, nongravelly, gravelly and cobbly moderately fine and medium textured with gravelly moderately coarse soil below 30 inches in some places.

The Paleorthids have a hardpan and are moderately deep, well drained, calcareous, medium textured gravelly and nongravelly with strong lime horizons occurring between 16 and 23 inches and a lime cemented hardpan between 24 and 30 inches.

The Torrifuvents are deep and moderately deep, well drained, calcareous, moderately coarse to moderately fine textured. These soils are on side slopes of the hills where erosion and runoff are great enough to keep the soil from developing a strong lime horizon. In some places cobbles and gravel are scattered on the surface and through the profile.

The Lithic Torriorthents are shallow, well drained, calcareous, gritty or gravelly medium textured over bedrock between 10 and 20 inches. In some places a weak lime horizon is forming on top of the bedrock.

The Torrifuvents in the valleys are deep, well drained, calcareous, medium and moderately fine or gravelly moderately coarse textured with some cobbles in the narrow bottoms near the mouth of the valleys.

The water-holding capacity is about 0.9 to 1.5 inches in the shallow soils and 3 to 9 inches in the deep soils for a depth of five feet. The erosion is moderate but ranging to severe in the Torrifuvents. The average annual precipitation is 6 to 8 inches.

The vegetal cover is mainly yellowbrush, black or low sagebrush, range ratany, big sagebrush, winterfat, Brigham tea, Indian ricegrass, galleta, squirreltail, blue grama and globemallow.

The range sites are Desert Limy Loam, Desert Gravelly Loam, Desert Loam and Desert Shallow Loam.

Association 127

This association consists of 55 percent Typic Natrargids and 45 percent Typic Torrifuvents. They are forming on alluvial alkali bottoms in mixed alluvium derived from igneous and sedimentary rocks. The slopes are 0 to 1 percent and elevations range from 4,850 to 5,480 feet above sea level.

There are small inclusions of: (1) Typic Calciorthids, north of Milford on the west side of the Beaver River channel, that are gravelly and nongravelly moderately coarse to moderately fine textured with the strong lime horizon at about 16 inches; (2) Typic Calciorthids, north of Milford about 18 miles, that are medium and moderately fine textured, strongly alkali, with a strong lime horizon occurring between 8 and 12 inches; (3) Typic Torrifuvents, about 12 miles north of Cedar City, that are deep, somewhat poorly and moderately well drained, stratified moderately coarse to moderately fine textured with big sagebrush, rubber rabbitbrush, alkali sacaton, saltgrass and halogeton vegetal cover.

The Natrargids are deep, well and moderately well drained, calcareous, with a medium textured surface soil, moderately fine textured B2t horizon, medium to fine textured C horizons with a Bca horizon occurring between 7 and 12 inches below the surface. They are strongly to very strongly alkali and in some places are strongly saline.

The Torrifuvents are deep, well and moderately well drained, calcareous, moderately to very strongly alkali and in some places strongly saline, and medium and moderately fine textured.

These soils will hold about 4 to 11 inches of available water for a depth of five feet. There is slight and moderate erosion. The average annual precipitation is estimated to be 5 to 8 inches.

The vegetation is dominantly shadscale, greasewood, bud sagebrush, yellowbrush, cheatgrass, winterfat and alkali sacaton.

These are Desert Flats, Desert Salt Flats, Alkali Bottoms and Desert Loam range sites.

Association 128

This association consists of Xerollic Calciorthids. They are forming on alluvial fans and lake terraces in mixed alluvium derived from igneous and limestone rocks. The slopes range from 4 to 6 percent and the elevation ranges from 5,040 to 5,950 feet above sea level.

The soils are deep, well drained, calcareous, medium textured or gravelly and cobbly medium textured with a strong lime horizon occurring between 16 and 24 inches.

They will hold approximately 5 to 9 inches of available water in a five-foot profile. The erosion is slight. The average annual precipitation is about 9 to 12 inches.

The vegetal cover consists of big sagebrush, yellowbrush, Brigham tea, horsebrush, squirreltail, galleta, cheatgrass, threeawn, Indian ricegrass, loco and Russian thistle.

Range sites are Semidesert Limy Loam and Semidesert Gravelly Loam.

Association 129

This association consists of 70 percent Typic Torrifluvents and 30 percent Typic Torriorthents. They are forming on the Beaver River flood plain and eolian clay dunes in mixed alluvium derived from igneous and sedimentary rocks. The slopes are 0 to 1 percent with the slopes ranging up to about 7 percent on the side slopes of the dunes. Elevations range from 4,820 to 4,960 feet above sea level.

The Torrifluvents are deep, moderately well drained, moderately to very strongly alkali and in some areas strongly saline, having medium to fine textured horizons, with most of the upper 25 or 30 inches having a black or very dark brown color.

The Torriorthents are in the blown-out area between 10 and 18 miles north of Milford. It has dunes that are from 2 to 13 feet high, is well drained, moderately fine to fine textured and moderately to strongly alkali.

Water-holding capacity of these soils is about 6 to 9 inches for a depth of five feet. There is moderate and severe erosion. The average annual precipitation is about 5 to 8 inches.

The vegetal cover is predominantly rubber rabbitbrush, greasewood, saltgrass, alkali sacaton, Russian thistle, poverty weed and alkali mallow, with 50 to 65 percent of the area denuded of vegetation.

Range sites for the area are Desert Flats, Alkali Bottoms and Desert Salt Flats.

Association 130

This mapping unit consists of 60 percent Xerollic Calciorthids, 15 percent Xerollic Haplargids (do not occur in Tinic Valley), 20 percent Xeric Torrifuvents and 5 percent Xerollic Paleorthids. They are forming on low rolling hills and alluvial fans in residuum and alluvium derived from igneous and sedimentary rocks. The slopes range from 2 to 15 percent, but are dominantly 3 to 10 percent mainly on easterly exposures. Elevations range from 5,000 to 6,500 feet above sea level.

The Calciorthids are deep, well drained, calcareous, moderately coarse and medium textured except in Tinic Valley the soils are dominantly gravelly or cobbly throughout with the strong lime horizon occurring between 12 and 25 inches below the surface.

The Haplargids are deep, well drained, with medium textured gravelly and nongravelly surface soils, nongravelly and gravelly moderately fine B2t horizons and gravelly medium textured C horizons, with a strong lime horizon occurring between 15 and 20 inches below the surface.

The Torrifuvents are deep, well drained, calcareous, moderately coarse, medium or gravelly moderately coarse textured. Some of the valleys are gullied.

The Paleorthids are shallow hardpan soils that are well drained, calcareous, medium and moderately fine textured with the strong lime horizon occurring between 12 and 16 inches and the hardpan between 14 and 20 inches.

The available water-holding capacity is 3 to 9 inches for a depth of five feet. There is slight and moderate water and wind erosion. The average annual precipitation is approximately 8 to 12 inches.

The vegetation is predominantly black or low sagebrush, big sagebrush, juniper, yellowbrush, winterfat, Brigham tea, woody phlox, fourwing saltbush, range ratany, galleta, Indian ricegrass, squirrel-tail, blue grama, needleandthread grass, sand dropseed, threeawn, loco, sandwort, biscuit root and buckwheat.

Range sites consist of Semidesert Loam, Semidesert Limy Loam and Semidesert Shallow Hardpan.

Association 131

This association consists of 50 percent Calciustolls, 30 percent Argiustolls, 15 percent Haplustolls and 5 percent Rock outcrops. They are forming on rolling hills and old alluvial fans in residuum and colluvium derived from intermediate and acid igneous and sedimentary

rock. The slopes range from 3 to 30 percent but are dominantly 3 to 10 percent. Elevations range from 5,600 to 6,400 feet above sea level.

The Calciustolls are deep and moderately deep, well drained soils with no coarse fragments or gravelly, cobbly, or stony, medium and moderately coarse textured, with strong lime horizons occurring between 12 and 20 inches. Small areas of this soil have a lime cemented hardpan occurring between 15 and 20 inches in depth.

The Argiustolls are deep, well drained with gravelly or nongravelly medium textured surface and nongravelly or gravelly medium to moderately fine textured B2t horizons. In some areas the B2t horizons are cobbly or stony. They have gravelly, cobbly or stony medium and moderately fine textured C horizons, with the strong lime horizons occurring between 12 and 24 inches below the surface.

The Haplustolls are deep or moderately deep well drained with nongravelly, gravelly or cobbly moderately fine to moderately coarse textured soils. These soils occur in narrow alluvial valleys.

These soils will hold from 7.5 to 11 inches of available water in a five-foot profile. Erosion is moderate and occasional deep gullies are forming. The average annual precipitation ranges from about 12 to 15 inches.

The vegetal cover is mainly pinyon-juniper, big sagebrush, Brigham tea, galleta, rabbitbrush, bitterbrush, Indian ricegrass, needleand-thread and squirreltail.

Range sites are Upland Loam, Upland Gravelly Loam, Upland Loam (J.P.), warm season and Upland Limy Loam.

Association 132

This association consists of Xeric Torrifluvents forming in alluvium derived from mixed, dominantly sedimentary rocks. They are forming on alluvial fans, flood plains and valley bottoms with 0 to 10 percent slopes, but dominantly 0 to 3 percent. Elevation ranges from 5,425 to 6,000 feet above sea level on all exposures.

Approximately 75 percent of these soils are deep, well drained, calcareous and moderately coarse ranging to fine textured highly stratified soils. Water-holding capacity for plant use ranges from approximately 6.0 to 11.0 inches to a depth of five feet.

Approximately 20 percent of the soils are deep, well drained, calcareous, gravelly or very gravelly, moderately coarse and medium textured highly stratified soils. Water-holding capacity for plant use is approximately 3.0 to 6.0 inches per five-foot profile. These soils occur primarily in the flood plain of Coal Creek.

There are some small areas of moderately well and somewhat poorly drained, moderately coarse to fine textured, moderately and strongly saline-alkali soils in valley bottoms and near old lake beds. These soils are moderately eroded on the steeper slopes near the mountains. The highly stratified soils occurring on the Coal Creek flood plain have a frequent overflow hazard (1 in 5 years) and are subject to considerable surface silting from silt laden irrigation water and floodwaters.

Average annual precipitation is 8 to 11 inches.

These soils are used for irrigated cropland in Cedar Valley and Parowan Valley. Principal crops grown are alfalfa and small grains.

The areas not irrigated support a vegetal cover of big sagebrush, rabbitbrush, cheatgrass, galleta, alkali sacaton, Indian ricegrass, squirreltail and fourwing saltbush.

Range sites are Semidesert Gravelly Loam (warm season), Semidesert Loam (warm season), Semidesert Limy Loam, Semidesert Clay and Semidesert Silt Loam. Dominant land capability classes for the irrigated soils are IIc2, IIe2, IIe22, IIe24, IIe26, IIIe2, IIIe24 and IIIe26.

Association 133

This soil association consists of 50 percent Argiborolls, 25 percent Argic Cryoborolls, 5 percent Lithic Haploborolls, 5 percent Lithic Argiborolls, 5 percent Haploborolls and 10 percent Rock outcrops. These soils are developing on mountain slopes and mountain tops in residuum and alluvium from sandstone, shale, limestone, intermediate and basic igneous rock. The slopes range from 3 to 70 percent but are dominantly 15 to 50 percent on all exposures. Elevations range from 7,500 to 9,000 feet above sea level.

The Argiborolls are deep or moderately deep, well drained soils. They have medium or moderately fine textured gravelly or nongravelly surface soil. The B2t horizons range in texture from moderately fine to fine; in some locations they are gravelly, cobbly or stony. The B2t horizons often extend to depths near 60 inches. A zone of carbonate accumulation occurs below 15 inches to near 60 inches in depth at some locations.

The Argic Cryoborolls are deep or moderately deep, well drained soils. They have nongravelly or gravelly medium to moderately fine textured surface soils. The B2t horizons are nongravelly or gravelly, cobbly or stony moderately fine to fine textured. The B2t horizons extend to depths of 60 inches or more. The entire profile is leached of carbonates at some locations.

The Lithic Haploborolls are very shallow or shallow, well drained soils. They have nongravelly or gravelly, cobbly or stony medium textured surface soils and nongravelly, gravelly cobbly or stony medium to moderately fine C horizons overlying igneous bedrock at 7 to 20 inches in depth.

The Lithic Argiborolls are very shallow or shallow, well drained soils. They have nongravelly or gravelly, cobbly or stony medium to moderately fine textured surface soils. The B2t horizons are nongravelly, gravelly, cobbly or stony moderately fine to fine textured soils overlying bedrock at 8 to 20 inches.

The Haploborolls are deep or moderately deep well drained soils. They have nongravelly, gravelly, cobbly or stony medium textures for 60 inches or more.

The shallow and very shallow soils will hold about 0.5 to 3 inches of water and deep and moderately deep soils will hold about 3 to 11 inches of water for plant use. Approximately 60 percent of the area is moderately eroded, 30 percent slightly eroded and 10 percent has frequent deep gully erosion. The average annual precipitation ranges from 16 to 20 inches.

The vegetal cover is mainly native bluegrass, Columbia needlegrass, dryland sedge, needleandthread, oakbrush, mountainmahogany, serviceberry, snowberry, squawapple, big sagebrush and chokecherry.

Range sites are Mountain Loam (Oakbrush), Mountain Loam, Mountain Stony Loam, Mountain Shallow Stony Loam and Mountain Shallow Loam.

Association 134

This association consists of 60 percent Argiustolls, 30 percent Calciustolls and 10 percent Haplustolls. They are forming on rolling hills and old alluvial fans in residuum and alluvium derived from mixed sedimentary and intermediate and acid igneous rock. The slopes range from 3 to 30 percent but are dominantly 3 to 10 percent. Elevations range from about 5,500 to 6,500 feet above sea level.

The Argiustolls are deep, well drained soils with no coarse fragments or gravelly, cobbly or stony medium textured surface soil, and nongravelly or gravelly or cobbly medium to moderately fine textured B2t horizons. They have nongravelly or gravelly, cobbly and stony medium and moderately fine textured C horizons with strong lime horizons at 10 to 30 inches in depth.

The Calciustolls have nongravelly or gravelly, cobbly and stony medium textured surface and subsoils. They have strong lime horizons forming between 10 and 30 inches below the surface.

These soils hold from 6 to 11 inches of available water for plant use in a five-foot profile. Erosion is moderate and occasional deep gullies are forming. The average annual precipitation ranges from about 12 to 16 inches.

The vegetal cover is mainly big sagebrush, pinyon pine, juniper, serviceberry, squirreltail, Indian ricegrass, western wheatgrass, oakbrush, bitterbrush, snowberry and areas of seeded crested wheatgrass.

Range sites are Upland Loam, Upland Gravelly Loam, Upland Loam (J.P.), Upland Gravelly Loam (J.P.), and Upland Limy Loam (J.P.).

Association 135

This soil association consists of 40 percent Argiustolls, 25 percent Calciustolls, 25 percent Haplustolls, 5 percent Xerollic Haplargids and 5 percent Xerollic Calciorthids. They are forming on alluvial fans and valley bottoms in mixed alluvium from acid and intermediate igneous rock. The slopes range from 1 to 10 percent and are dominantly 2 to 6 percent on east and northerly exposures. Elevations range from 5,425 to 5,700 feet above sea level.

The Argiustolls are deep, well drained with a moderately coarse to medium textured surface soil. They have medium to moderately fine textured B2t horizons and gravelly moderately coarse to moderately fine textured C horizons. Strong lime horizons occur between 15 and 30 inches below the surface.

The Calciustolls are deep, well drained and have moderately coarse to medium textured surface soils. They have gravelly or nongravelly medium to moderately fine textured C horizons with a strong lime horizon occurring between 15 and 24 inches below the surface.

The Haplustolls are deep, well drained soils with gravelly or nongravelly medium textures throughout the profile. They occur on fans and in drainageways and may have frequent deep gullies over the landscape.

The Haplargids are deep, well drained soils with medium to moderately fine surface textures. They have medium to moderately fine textured B2t horizons and gravelly moderately coarse to moderately fine C horizons. Strong lime horizons occur between 8 and 15 inches below the surface. These soils will hold approximately 6 to 11 inches of available water for plant use in a five-foot profile. They are generally moderately eroded.

The Calciorthids are deep, well drained, with moderately coarse to medium textured surface soils. They have gravelly and nongravelly moderately coarse to moderately fine textured C horizons; about 60

percent are gravelly. Strong lime horizons occur between 8 and 15 inches below the surface.

Water-holding capacity is 5 to 10 inches for a depth of five feet. The average annual precipitation is 12 to 14 inches.

The vegetation is dominantly big sagebrush, squirreltail, Indian ricegrass and yellowbrush. Much of this area is being used for dry cropland for wheat and seedings of crested wheatgrass.

Range sites are Upland Loam, Upland Limy Loam (juniper-pinyon), Upland Gravelly Loam, Upland Loam (juniper-pinyon), and Upland Limy Loam.

Association 136

This association consists of 60 percent Rock outcrops, Rock land and Stony colluvial land, 15 percent Argiustolls, 10 percent Lithic Haplustolls, 10 percent Lithic Argiustolls and 5 percent Haplustolls. They are forming on mountain slopes and low mountain tops on the flatter more sheltered slopes in residuum and colluvium from shale and sandstone. The slopes range from 15 to 70 percent and the areas where soils occur are dominantly 15 to 30 percent on all exposures. Elevations range from 5,800 to 8,000 feet above sea level.

The Argiustolls are deep and well drained with medium textured surface soils. In some locations they are gravelly, cobbly or stony. They have medium to moderately fine textured B2t horizons. About 75 percent of these soils have 20 percent or more of coarse fragments and are gravelly, cobbly or stony in the B2t horizons. The C horizons are moderately coarse to moderately fine textured that are cobbly or very cobbly. Strong lime horizons occur between 15 and 30 inches below the surface.

The Lithic Haplustolls are very shallow and shallow, well drained soils. They have medium to moderately coarse textured surface soils; about 75 percent of them are gravelly, very gravelly, cobbly or very cobbly. They have moderately coarse to moderately fine textured subsoils; about 80 percent are gravelly, very gravelly, cobbly or very cobbly. These soils overlies bedrock between 4 and 20 inches.

The Lithic Argiustolls are very shallow and shallow, well drained soils with medium textured gravelly or cobbly surface soils, and medium to moderately fine textured B2t horizons; about 80 percent are gravelly or very gravelly, cobbly or very cobbly in the B2t. Bedrock occurs between 8 and 20 inches below the surface.

The Haplustolls are deep and moderately deep, well drained soils that are medium or moderately fine textured; at some locations the soils are gravelly or cobbly.

The shallow and very shallow soils hold about 0.5 to 3 inches of water and the deep and moderately deep soils will hold approximately 3 to 11 inches of water in a five-foot profile. Approximately 75 percent of these soils are severely eroded and approximately 25 percent are moderately eroded. The average annual precipitation ranges from 12 to 15 inches.

The vegetal cover is dominantly pinyon pine, juniper, big sagebrush, mountainmahogany, squirreltail, Indian ricegrass, western wheatgrass, threeawn, bluebunch wheatgrass and cheatgrass. Some areas are supporting oakbrush and ponderosa pine.

Range sites are Upland Stony Hills (juniper) warm season, Upland Shallow Shale (pinyon-juniper), Upland Stony Loam (juniper-pinyon), Upland Loam (juniper-pinyon), Upland Shallow Loam, Upland Gravelly Loam, and Upland Loam.

The miscellaneous land types of Rock outcrops, Rock land and Stony colluvial land consist of rock outcrops or very shallow or very stony lands. They are usually steep or very steep and have very little value for agricultural use. They are high contributors of runoff. They are class VIII and are not range sites.

Association 137

This soil association consists of 70 percent Argic Cryoborolls, 10 percent Lithic Cryoborolls, 10 percent Argic Lithic Cryoborolls and 10 percent Rock outcrops. They are developing on high mountain slopes, high mountain tops and high mountain open parks in residuum and alluvium from intermediate and basic igneous rock. The slopes range from 3 to 70 percent but are dominantly 30 to 50 percent on all exposures. Elevations range from 8,500 to 10,000 feet above sea level.

The Argic Cryoborolls are deep or moderately deep well drained soils. They have a medium to moderately fine textured surface soil. Some areas are gravelly or cobbly. The subsoils or B2t horizons range in texture from moderately fine to fine, and are sometimes gravelly, cobbly or stony; they often extend to depths of 60 inches or more. In some locations the soils have A2 horizons. The entire soil profile is usually leached of carbonates to depths below 60 inches. On the high mountain ridge tops and the steeper high mountain slopes bedrock generally occurs between 20 and 40 inches.

The Lithic Cryoborolls are very shallow or shallow well drained soils. They have medium to moderately fine textured C horizons; in some locations they are gravelly, cobbly or stony. They are underlain by bedrock at 8 to 20 inches in depth. The soil profile is leached of carbonates.

The Argic Lithic Cryoborolls are very shallow or shallow well drained soils. They have medium to moderately fine textured surface soils that are gravelly, cobbly or stony at some locations. The B2t horizons are moderately fine to fine textured and gravelly, cobbly or stony at some locations. These soils overlies bedrock between 10 and 20 inches depth. The soil profile is leached of carbonates.

The shallow and very shallow soils will hold about 0.5 to 3 inches of water and the deep and moderately deep soils will hold approximately 3 to 11 inches of water in a five-foot profile for plant use. Approximately 50 percent of the area is moderately eroded and 50 percent is slightly eroded. The average annual precipitation ranges from 22 to 35 inches.

The vegetal cover is mainly native bluegrasses, slender wheatgrass, mountain brome, dryland sedge, Letterman needlegrass, bluebell, peavine, aspen, Douglasfir, white fir and balsam fir.

Range sites are Sub-alpine Slopes, High Mountain Shallow Loam (Aspen), High Mountain Loam, High Mountain Clay, High Mountain Loam (Aspen), and High Mountain Stony Loam (Aspen).

Association 138

This mapping unit consists of 70 percent Argic Cryoborolls, 20 percent Argic Lithic Cryoborolls, 10 percent Lithic Cryoborolls and 10 percent Rock outcrops and small areas of Typic Cryoborolls that occur in alluvial valleys. The soils are forming on mountain slopes and mountain tops in residuum from sandstone and shale rock. The slopes range from 3 to 30 percent and are dominantly 10 to 20 percent on all exposures. Elevations range from 8,600 to 9,800 feet above sea level.

The Argic Cryoborolls are deep and moderately deep well drained soils with medium or moderately fine textured surface soils that are cobbly or very cobbly in 15 to 20 percent of the area and moderately fine ranging to fine textured B2t horizons which are 20 to more than 60 inches in thickness. The C horizons range from medium to fine in texture. In most of the area the entire soil profile is leached of lime but in some areas a strong lime horizon occurs below 24 inch depths.

The Argic Lithic Cryoborolls are very shallow or shallow, well drained soils. They have medium or moderately fine textured B2t horizons overlying sandstone or weathering shale at 8 to 20 inch depths. About 30 percent of these soils have cobbly or very cobbly surface soils and B2t horizons.

The Lithic Cryoborolls are very shallow or shallow, well drained soils. They have medium to moderately fine textured surface soils

and moderately fine to fine textured C horizons overlying sandstone or raw weathering shale at 8 to 20 inches in depth. About 30 percent of these soils have cobbly surface soil and subsoil.

The Typic Cryoborolls in the alluvial valleys are deep, well drained ranging to poorly drained, moderately fine to fine textured soils.

The soils have frequent deep gullies and are severely eroded. The very shallow and shallow soils hold from 1 to 3.5 inches of water for plant use and the moderately deep and deep soils hold from 3.5 to 11 inches of water for plant use to a depth of five feet. The average annual precipitation is estimated to be 22 to 40 inches.

The vegetation is dominantly slender wheatgrass, Letterman needlegrass, larkspur, aspen, peavine, mountain brome and snowberry.

Range sites are Sub-alpine Slopes, High Mountain Loam, High Mountain Clay, High Mountain Loam (Aspen), High Mountain Stony Loam (Aspen), and High Mountain Shallow Loam.

Association 139 (irrigated)

This mapping association consists of 75 percent Haploxerolls and 25 percent Calcixerolls. The soils are forming in material from sedimentary rocks such as limestone, sandstone and quartzite. This unit occurs on gently sloping (1 to 3 percent slopes) alluvial fans and flood plains on a westerly exposure. Elevation ranges from 4,800 to 5,200 feet.

The Haploxerolls are deep, moderately coarse, and medium textured, and well drained. Some soils are underlain by cobbles and gravel occurring below 20 inches.

The Calcixerolls are deep, moderately coarse and medium textured, well drained soils with strong lime horizons.

Water-holding capacity ranges from 7 to 10 inches in a five-foot depth. Erosion is slight to moderate. Precipitation ranges from 12 to 14 inches.

The use is primarily irrigated cropland.

Association 140 (irrigated)

This association consists of 60 percent Xeric Torrifuvents and 40 percent Xerollic Calciorthids. The soils are forming in material from mixed igneous and sedimentary rocks such as limestone, sandstone, and quartzite. This unit occurs on nearly level to gently sloping

(1 to 3 percent slopes) alluvial fans and flood plains on a west and southwest exposure. Elevation ranges from 4,600 to 4,800 feet.

The Torrifluvents are deep well drained and moderately coarse to moderately fine textured; some are underlain by cobbles and gravel occurring below 20 inches in depth.

The Calciorthids are deep, well drained, moderately coarse to moderately fine textured soils with strong lime horizons. A small percent of this soil is underlain with cobbles and gravel.

Erosion is slight to moderate. Precipitation ranges from 8 to 12 inches.

Use is irrigated cropland.

Association 141 (dry and irrigated)

This association consists of 50 percent Haploxerolls, 35 percent Calcixerolls, and 15 percent Argixerolls. In Tinic Valley there are small areas in the valley bottom that the soils are Calciorthids and Torrifluvents. The soils are forming in material from mixed sedimentary, quartzite and igneous rocks. This association occurs on gently to moderately sloping (1 to 6 percent) alluvial fans on all exposures but occurs predominantly on a westerly aspect. Elevation ranges from 4,800 to 6,000 feet.

The Haploxerolls are deep, well drained and moderately coarse to medium textured; often underlain by cobbles and gravel. Water-holding capacity is 7.5 to 10 inches in a five-foot depth.

The Calcixerolls are deep, well to somewhat excessively drained; textures are moderately coarse to medium. Strong lime horizons occur between 12 to 20 inches. Gravel or cobbles usually occur between depths of 10 and 30 inches. Water-holding capacity is 5 to 7.5 inches in a five-foot depth.

The Argixerolls are deep, well drained with medium to moderately fine and occasionally fine textures. They have textural B2t and lime horizons. In some soils gravel or cobbles occur below 20 inches. Water-holding capacity ranges from 6 to 11 inches for a depth of five feet.

Erosion is slight to moderate. Precipitation ranges from 12 to 15 inches.

The native vegetation is big sagebrush, bluebunch wheatgrass, native bluegrasses, bitterbrush, and Indian ricegrass.

These soils are primarily used for dry and irrigated cropland; a few areas are used for range land.

Association 142 (dry and irrigated)

This soil association consists of 50 percent Xeric Torrifuvents and 50 percent Xerollic Calciorthids. The soils are forming in material from mixed sedimentary and igneous rocks mainly limestone, sandstone, and quartzite. This unit occurs on gently to moderately sloping (1 to 6 percent) alluvial fans on a westerly and easterly exposure. Elevation ranges from 4,750 to 5,500 feet.

The Torrifuvents are deep, moderately coarse and medium textured, well drained soils. Some areas are underlain by cobbles and gravel occurring below 20 inches.

The Calciorthids are deep, well drained, moderately coarse to medium textured soils. Some soils are gravelly or cobbly. Strong lime horizons occur at about 10 to 20 inches.

Water-holding capacity ranges from 7 to 10 inches in a five-foot depth. Erosion is slight to moderate. Precipitation ranges from 10 to 12 inches.

The native vegetation is western wheatgrass, Indian ricegrass, big sagebrush, yellowbrush, rubber rabbitbrush.

The use is dry cropland, irrigated cropland and small areas of range land; however, this is marginal dry cropland.

Association 143

This association consists of 60 percent Lithic Haploxerolls, 20 percent Rock outcrops, 10 percent Calcixerolls and 10 percent Argixerolls. They are forming in residuum from sedimentary and igneous parent rock on steep to very steep mountain slopes. The slopes range from 20 to 40 percent. Elevations range from 5,400 to 6,000 feet.

The Lithic Haploxerolls are shallow and very shallow, well to excessively drained, very cobbly loams.

The Calcixerolls are deep and moderately deep, well drained soils with 10 to 40 percent coarse fragments on the surface, medium and moderately coarse textured with strong lime horizons occurring between 12 to 20 inches. There are small areas that have a lime cemented hardpan between 15 and 20 inches in depth.

The Argixerolls are deep and well drained with gravelly or non-gravelly medium textured surface and moderately fine textured B2t horizons. They have medium textured C horizons with strong lime horizons occurring between 12 and 24 inches.

These soils will hold about 1.5 to 11 inches of water for plant use in a five-foot depth. Erosion is moderate. The average annual precipitation is 12 to 15 inches.

The vegetal cover is mainly juniper, big sagebrush, bitterbrush, squirreltail, and bluebunch wheatgrass.

Range sites are Upland Stony Loam, Upland Gravelly Loam, Upland Limy Loam, and Upland Shallow Loam (J.P.).

Association 145

This association consists of 30 percent Xeric Torrifluvents, 40 percent Xerollic Calciorthids, 15 percent Xeric Torripsamments and 15 percent Rock outcrops. There are some inclusions of Natrargids. They are forming in mixed alluvium and residuum from basalt. The slopes are 0 to 20 percent and elevations range from 4,600 to 5,000 feet.

The Torrifluvents are deep, well drained, medium and moderately coarse textured, slightly saline and alkali.

The Calciorthids are deep, well drained, medium and moderately coarse textured with a strong lime horizon occurring about 15 inches; some are gravelly or very gravelly throughout.

The Torripsamments are deep, excessively drained, sandy, slightly alkali soils.

These soils hold about 5 to 9 inches of water for plant use in a five-foot depth. Erosion is slight to severe hummocks. The average annual precipitation is 8 to 11 inches.

The vegetal cover is big sagebrush, shadscale, greasewood, squirreltail, Indian ricegrass.

Range sites are Semidesert Loam, Semidesert Limy Loam, Semidesert Sand, and Semidesert Gravelly Loam.

Association 146

This association consists of 60 percent Aquic Calciorthids and 40 percent Xeric Torrifluvents. They are forming in mixed alluvium from sedimentary and igneous rocks. The slopes are 0 to 6 percent, but are dominantly 0 to 2 percent on all exposures. Elevations are 4,650 to 4,750 feet.

The Aquic Calciorthids are deep, somewhat poorly drained, strongly saline, moderately fine to moderately coarse textured with a strong lime horizon occurring about 15 inches. This soil also contains a high amount of gypsum.

The Torrifluvents are deep, well drained, medium and moderately coarse textured.

These soils hold about 6.0 to 10 inches of water for plant use in a five-foot profile. Erosion is slight to moderate. The average annual precipitation is 8 to 10 inches.

The vegetal cover is saltgrass, alkali sacaton, pickleweed, greasewood, big sagebrush and squirreltail.

Range sites are Alkali Bottoms and Semidesert Loam.

Association 147

This association consists of 40 percent Xeric Torrifluvents, 30 percent Xerollic Calciorthids and 30 percent Rock outcrops. They are forming in alluvium and residuum from basalt. The slopes are 3 to 20 percent, on all exposures. Elevations are 4,800 to 5,000 feet.

The Torrifluvents are moderately deep to deep, well drained, medium and moderately coarse textured.

The Calciorthids are moderately deep to deep, well drained, medium and moderately coarse textured, cobbly and noncobbly on the surface.

The Rock outcrops are mainly lava ridges around the terrace.

These soils hold about 5 to 10 inches of water for plant use in a five-foot depth. Erosion is slight to moderate with some hummocks occurring on the north end of the terrace. The average annual precipitation is 8 to 10 inches.

The vegetal cover is big sagebrush, squirreltail, Indian ricegrass, shadscale, greasewood and Brigham tea.

Range sites are Semidesert Loam, Semidesert Limy Loam and Semidesert Gravelly Loam.

Association 148

This association consists of about 60 percent Lithic Xerollic Haplargids, 30 percent Rock land and 10 percent Xerollic Calciorthids. They are derived from intermediate igneous and granite rocks. Slopes range from 2 to 10 percent. They occur at elevations of 5,600 to 6,100 feet above sea level.

The Haplargids are shallow with about a 3-inch thick sandy loam surface soil and a clay loam subsoil that is underlain by bedrock at depths of 8 to 20 inches.

The Rack land consists of rock outcrops and very shallow soil 2 to 3 inches thick over bedrock.

The Calcicorthids consist of deep soils that are gravelly or very gravelly loams and sandy loams throughout and have strong lime horizons at about 10 to 15 inches.

The water-holding capacity of the shallow soils is 1 to 3 inches above the bedrock, and the deep soils are 3 to 5 inches to a depth of five feet. Erosion is slight to moderate. The average annual precipitation is 10 to 12 inches.

The vegetative cover is blue grama grass, big sagebrush, yellowbrush, cliffrose and juniper.

Range sites are Semidesert Shallow Loam and Semidesert Gravelly Loam.

Association 149

This area consists of accumulation of loose strongly calcareous sand dunes. The dunes vary in size and shape, but are predominantly from 5 to 30 feet high. These two areas occur in the Escalante Valley. The dune area occurs at elevations of 5,100 to 5,200 feet above sea level.

Precipitation is 8 to 10 inches. Little runoff occurs from the dunes, but the wind erosion hazard is severe.

The vegetation is very sparse. It consists mainly of rabbitbrush, big sagebrush, greasewood and occasionally squawbush.

This land has no agricultural value.

GLOSSARY

Capability Class, subclass and unit

Roman numeral shows the capability class. Classes I through IV are suitable for cultivation. Class I has few limitations, II has moderate limitations, III severe limitations and IV very severe limitations. Classes V to VIII are not suitable for cultivation.

The subclass is shown as: e - erosion hazard, w - wetness, s - soil and c - climate hazard. The numbers following the subclass symbol are for the capability unit. The first number in the unit designation indicates the frost-free period: 1 - more than 150 days, 2 - 100 to 150 days, 3 - less than 100 days. The second unit number indicates soil characteristics: 4 - coarse fragments in soil, 6 - coarse texture, and 8 - saline-alkali conditions. Thus II e 24 represents capability class II, with an erosion hazard "e", in the climatic zone of 100 to 150 days frost-free period "2", and soil having gravel, cobble or stone that cause problems "4".

Depth, soil

Very shallow - less than 10 inches
Shallow - 10 to 20 inches
Moderately deep - 20 to 40 inches
Deep - more than 40 inches

Family

This term is described in the new soil classification system "Taxonomy". It consists of several parts. The first part indicates the soil texture such as fine-silty, coarse-loamy, skeletal etc. The next part indicates the mineralogy of the parent material such as montmorillonitic, carbonatic or mixed. Some families have a reaction class such as acid, calcareous or non-acid. Most families have a climatic designation such as frigid (cold), mesic (medium) or thermic (hot). Some soils as indicated by their names could not be in any other family than frigid. Cryorthents, Borolls and Boralfs are examples.

Horizon

A horizon - surface layer
B or B2 horizon - subsoil
Bt or B2t horizon - textural B horizon - zone of maximum clay accumulation, Argillic horizon - subsoil
C horizon - parent material. It is assumed the soil formed from this kind of material - substratum

ca horizon - zone of lime accumulation. Strong ca, lime horizon or calcic horizon has at least 15 percent lime and has more lime than the C horizon. Weak ca or lime horizon has an accumulation of lime but not so much as a strong ca horizon.

sa horizon - strong salt horizon-more than 2 percent soluble salt.

Permeability

refers to the rate water and air can move through the subsoil. These terms are defined in the Soil Survey Manual.

Range site

groups of soils according to their potential to produce the same kind and amount of vegetation.

Texture

fine - clay, silty clay or sandy clay
moderately fine - clay loam, silty clay loam or sandy clay loam.
medium - loam or silt loam
moderately coarse - sandy loam
coarse - sand, loamy sand
gravelly or cobbly - 20 to 50 percent gravel or cobble.
Very gravelly or very cobbly - more than 50 percent gravel or cobble.

TABLE 1.--Soil association areas by watershed and subbasin, Beaver River Basin (100 acres)

Soil Association Number	Sevier Lake Subbasin (2)	Fillmore Subbasin (2A)			
	Watershed	Watershed			Total
	2-1	2A-19	2A-24	2A-25	
68	-			73	73
70	-			34	34
72	-		75	51	126
73	-		89	334	423
74	-		97	61	158
75	-			105	105
80	-		4	59	63
81	-			129	129
89	-			56	56
90	-			41	41
91	-			22	22
92	-			39	39
93	-		72		72
94	-		15	105	120
95	-		28		28
96	-		36		36
98	583				-
99	3,719				-
100	783				-
104	1,597				-
105	567				-
106	1,255				-
107	821				-
108	263				-
109	90		16	54	70
111	-	146			146
120	-	633			633
121	27				-
122	707			142	142
126	62				-
127	964				-
128	15		16	61	77
130	-	455			455
131	-		131	104	235
139	-		23	68	91
140	-		222	112	334
141	-	114	138	180	432
142	-	276	105	68	449
143	-		11		11
145	-		47	46	93
146	-		35	181	216
147	-			7	7
Sub-total	11,453	1,624	1,160	2,132	4,916

TABLE 1.--Soil association areas by watershed and subbasin, Beaver River Basin (100 acres) - Cont.

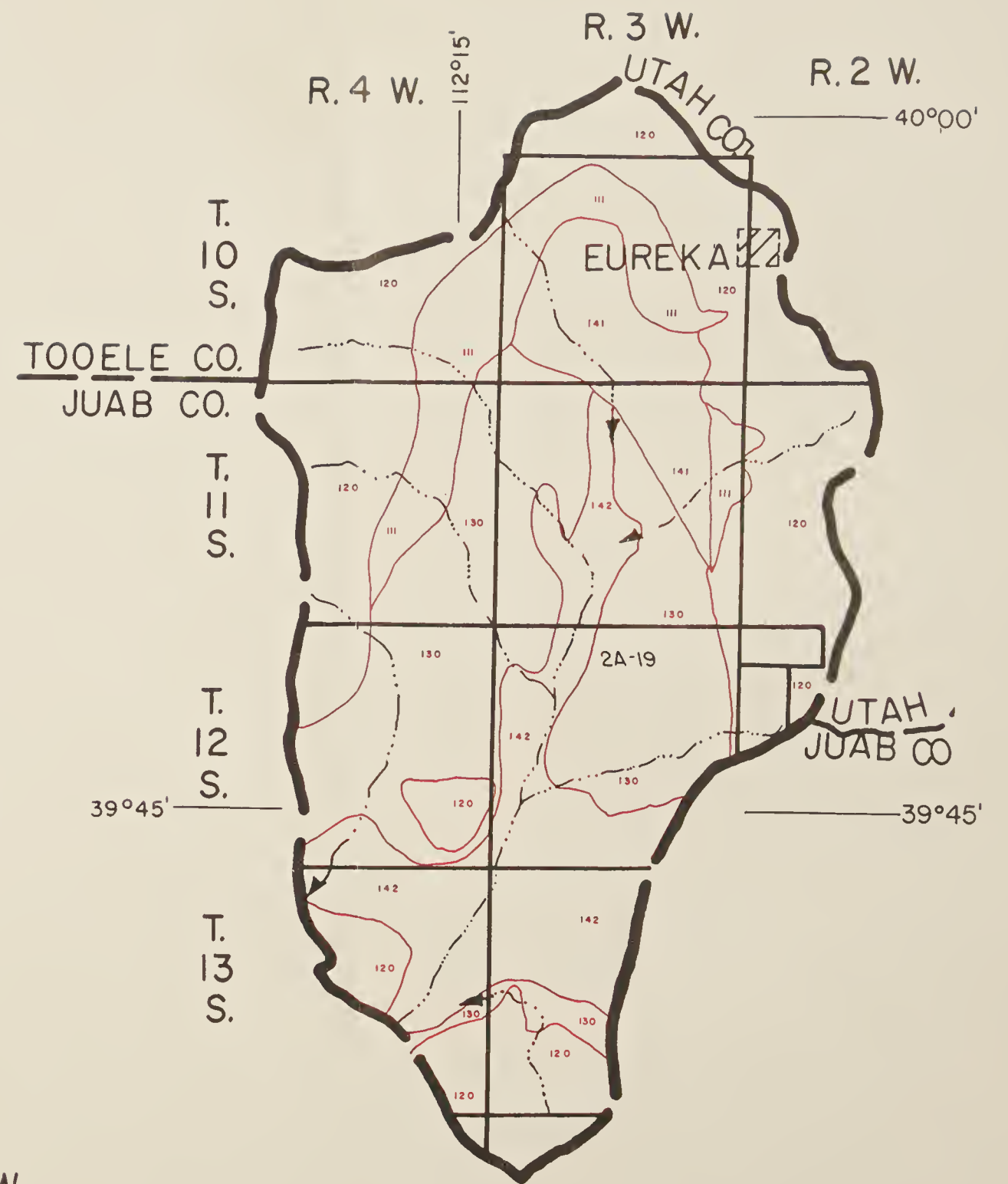
Soil Association Number	Beaver-Milford Subbasin (2B)							Total
	Watershed							
	2B-1	2B-2	2B-3	2B-4	2B-5	2B-6	2B-7	
60	74							74
61	31							31
62	13							13
65		5						5
66	30							30
67	79							79
68	67	110			74			251
69	108							108
70					26			26
71					16			16
75					11			11
76	56							56
77	44							44
78					45			45
79					11			11
82	27							27
83	54							54
84	118	68			12			198
85	183							183
86	104	5						109
87	13							13
88					49			49
89					32			32
97			7	251				258
98			82	131		205	407	825
99				524		768	1,139	2,431
100	224	80	357	144		200	22	1,027
101			126					126
102			10	14		68	7	99
103			35					35
104				25		47	107	179
105						50	7	57
106							17	17
107							34	34
108							110	110
109							87	87
110							564	564
111	262	262	130		82	285	78	837
112	104	104			14			118
113	36	36				63		99
114	70	70				11		81
115	160	160	136			207		503
116	91	91						91
117			140			140		280
118			79					79
119			324					324
120	678	199	370		25	112		1,384
121	38		112					150
122	52	31	185	21	39	172	19	519
124			94					94
127			161	60		468	571	1,260
128				58		39	80	177
129						84		84
130	17							17
141					61			61
145						495	481	976
146							5	5
147							83	83
Sub-Total	2,101	1,130	2,348	1,228	497	3,414	3,818	14,536

TABLE 1.--Soil association areas by watershed and subbasin, Beaver River Basin (100 acres) - Cont.

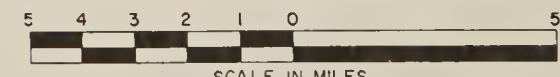
Soil Association Numbers	Cedar-Parowan Subbasin (2B1)						Total
	Watershed						
	2B1-1	2B1-2	2B1-3	2B1-4	2B1-5	2B1-6	
2				24			24
43	3						3
44	34						34
45	122						122
46	42						42
47	29						29
48	33						33
49	9						9
50	57		66				123
51	29		36				65
52	26		28				54
53	3		4				7
54			50				50
55			3				3
56			97				97
57			19				19
58			19				19
59			8				8
61			69				69
63			25				25
64			3				3
82			25				25
97				3			3
98					7		7
99					179		179
100	9		50	75	189		323
106				17	5		22
117	12		246	14			272
118			3		317	52	372
120			235			50	285
121			75		28	5	108
122	83	1	215	96	53	3	451
123					32		32
126					110		110
127			376	52	230		658
130	42	28	14	192	95		371
131	36			41			77
132	429	26	311	265			1,031
133	420	3	262	114			799
134			116	56			172
135	3		3	72			78
136	266	1	113				380
137	210	3	27				240
138	116						116
Sub-total	2,013	62	2,498	1,021	1,245	110	6,949

TABLE 1.--Soil association areas by watershed and subbasin, Beaver River Basin (100 acres) - Cont.

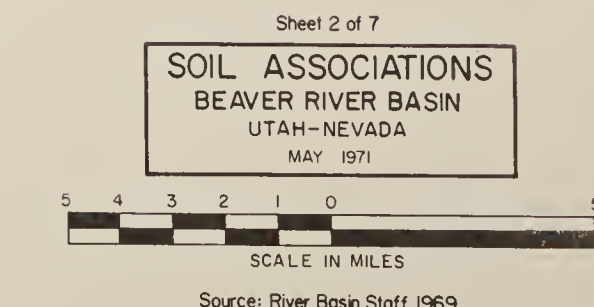
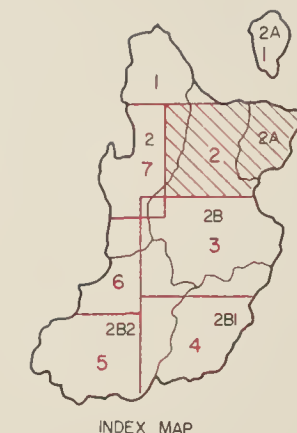
Soil Association Number	Escalante Desert Subbasin (2B2)					Total
	Watershed					
	2B2-1	2B2-2	2B2-3	2B2-4	2B2-5	
1	83	74		5		162
2	34			20		54
3	12					12
4	19					19
5	3					3
6	25					25
7	40			2		42
8	48	22				70
9	61					61
10	36					36
11	7					7
12	3					3
13	2					2
14	40					40
15	78					78
16	122	37				159
17	89					89
18	15					15
19	44					44
20	50	39				89
21	14					14
22		19				19
23		38				38
24		17				17
25		41				41
26		6				6
27	18	65	10			93
28		27				27
29	38	91				129
30		115	35			150
31		9				9
32		40				40
33		42				42
34		23	8			31
35	12	41				53
36		32				32
37		131				131
38		44				44
39		20				20
40	12	54				66
41		35				35
42		64	91			155
97				1		1
98		81	261	151		493
99	21		138	1,257		1,416
100	144		778	1,076	1	1,999
104			5	29		34
106			5			5
109			56			56
110	11		182	273		466
117				212		212
118				24	28	52
119				5		5
120			340	37	30	407
121				44	24	68
122	167		519	188		874
123		20	973	32	7	1,032
124		53	1,411	183		1,647
125				459		459
126				2		2
127	85		408	814		1,307
128	3		23			26
130				183		183
131	110			41		151
140	223	139	900			1,262
148			116			116
149			94			94
Sub-total	1,669	1,419	6,353	5,038	90	14,569

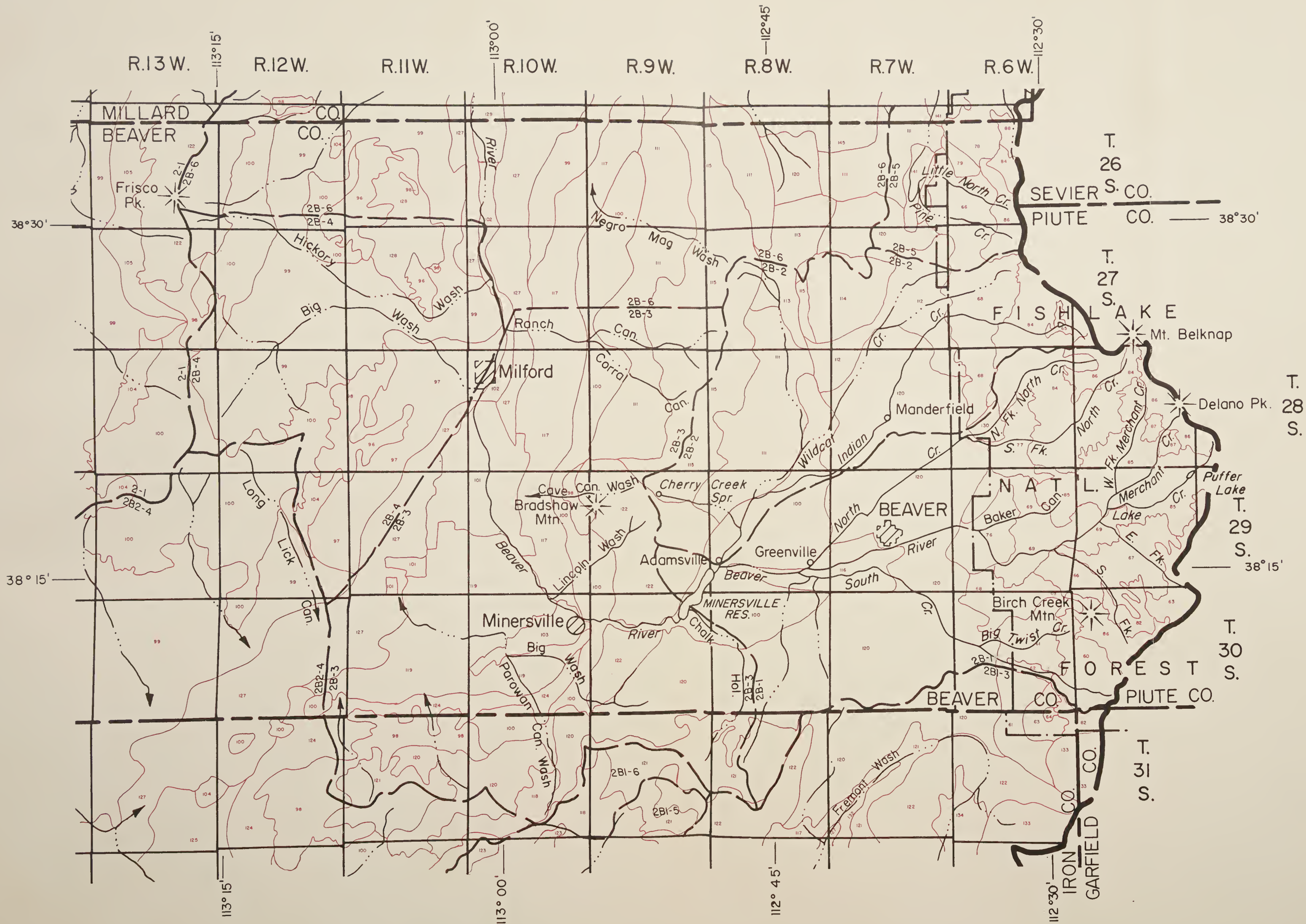


Sheet 1 of 7
SOIL ASSOCIATIONS
 BEAVER RIVER BASIN
 UTAH-NEVADA
 MAY 1971



Source: River Basin Staff 1969





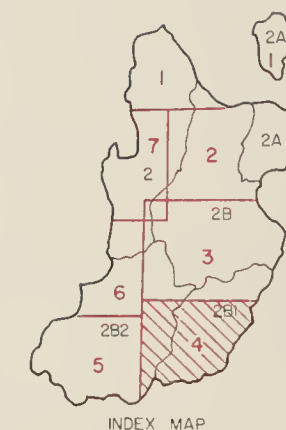
Sheet 3 of 7

SOIL ASSOCIATIONS
BEAVER RIVER BASIN
UTAH-NEVADA
MAY 1971

5 4 3 2 1 0 1 2 3 4 5

SCALE IN MILES

Source: River Basin Staff 1969



Sheet 4 of 7

SOIL ASSOCIATIONS
BEAVER RIVER BASIN
UTAH-NEVADA
MAY 1971

5 4 3 2 1 0 1 2 3 4 5

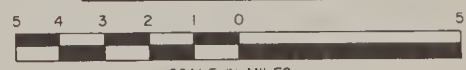
SCALE IN MILES

Source: River Basin Staff 1969



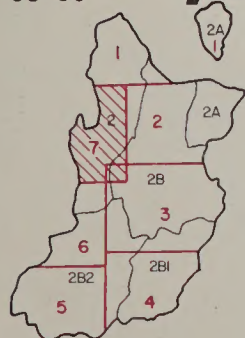
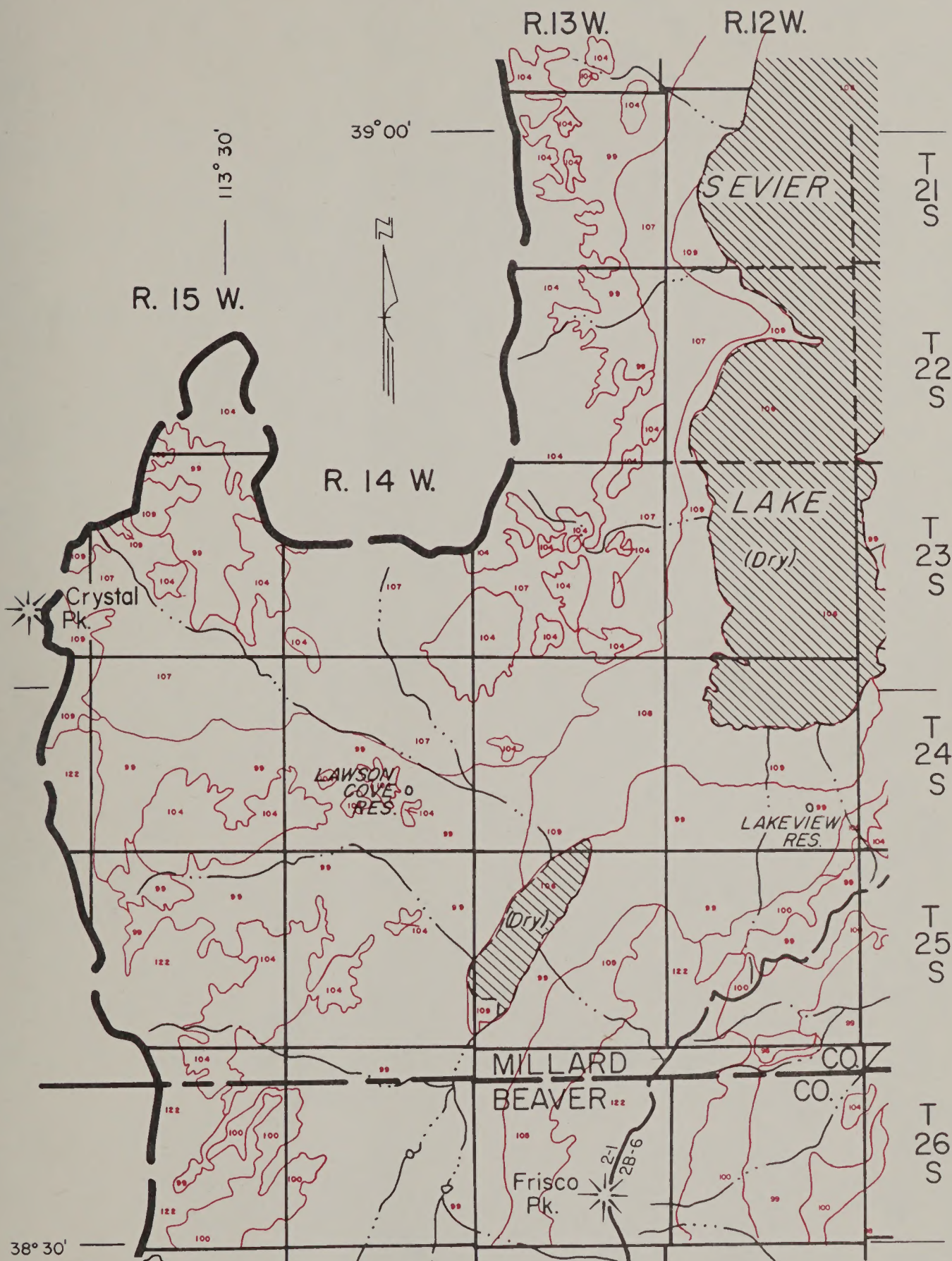
INDEX MAP

Sheet 6 of 7
SOIL ASSOCIATIONS
 BEAVER RIVER BASIN
 UTAH-NEVADA
 MAY 1971



SCALE IN MILES

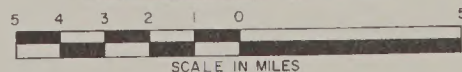
Source: River Basin Staff 1969



INDEX MAP

Sheet 7 of 7

SOIL ASSOCIATIONS
 BEAVER RIVER BASIN
 UTAH-NEVADA
 MAY 1971



Source: River Basin Staff 1969

